

Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOL. XIII.

NEW YORK, SEPTEMBER 4, 1858.

NO. 52.

NEW PROSPECTUS OF THE SCIENTIFIC AMERICAN.

FOURTEENTH YEAR:

MECHANICS, INVENTORS, MILLWRIGHTS,
FARMERS AND MANUFACTURERS.

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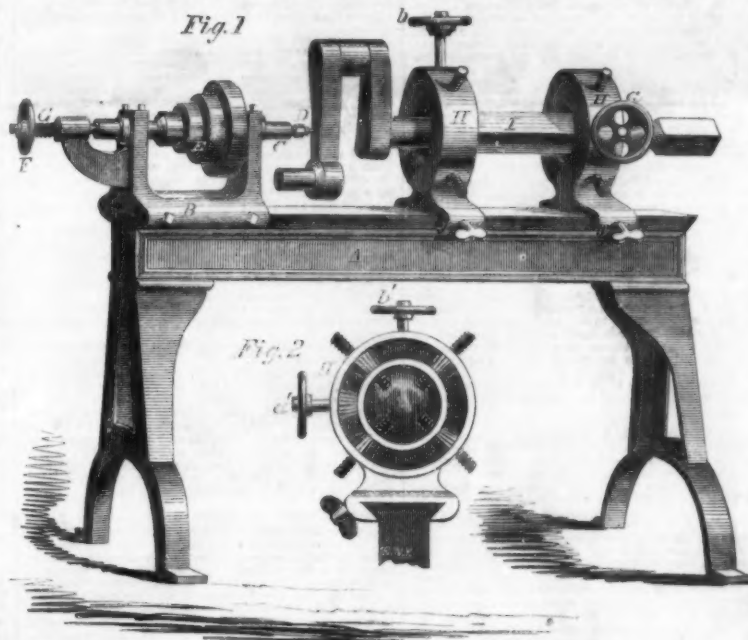
Improved Centering Lathe.

The lathe which is the subject of our illustration is so constructed as to bore centers in line with the geometrical center of any desired part of both regular and multiform objects. It often occurs that the object to be centered is of such form that some of its sections are eccentric to others, and it is indispensable that the centers be bored not concentric with the end, but eccentric to it, and concentric with some particular part which may be in the middle or more or less distant from the end. An object having some of these peculiarities is seen at I, Fig. 1. The object above explained, which has been hitherto accomplished by much manual labor, these inventors—G. Henderson and J. Steetle, of Alleghany City, Pa.—effect by the machine shown in perspective in Fig. 1.

The article to be centered is supported in the lathe by the part with which the centers are to be bored, in one of the concentric chucks, which are combined with a lathe and boring tool in line with the centers of the chuck.

A is the frame of the lathe, having a head, B, in which a spindle, C, revolves, holding a boring tool, D, by means of cone pulley, E,

HENDERSON & STEETLE'S CENTERING LATHE.



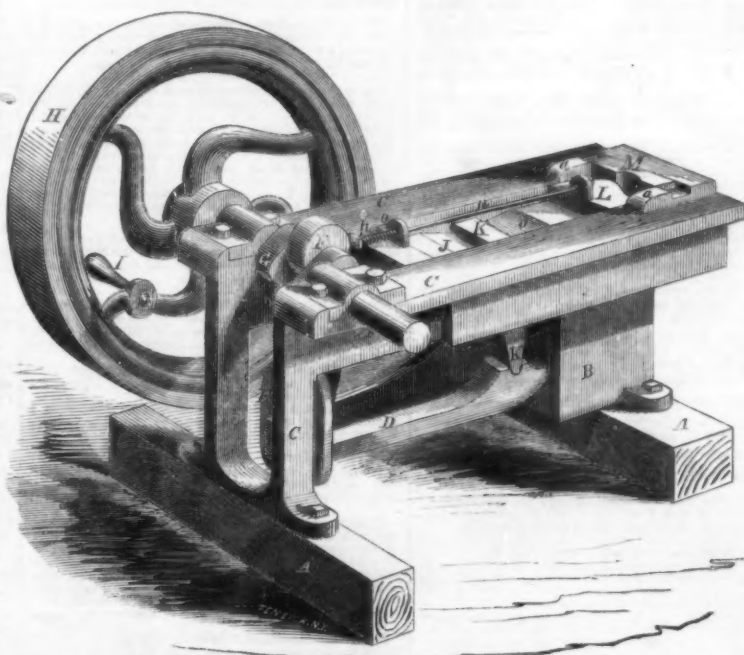
The tool, spindle and pulley are moved back and forth by the screw, G, and handwheel, F. H H are two concentric chucks made to slide along the bed of the lathe, to which they can be secured in any position by screws, J; a and b are hand wheels to secure the object in the chuck after it has been adjusted by the screws seen in Fig. 2, which is a front view of a chuck.

The operation is simple, the piece, I, being

secured in the chucks, H, in the desired position; the boring tool is brought in contact with it, bores a center coincident with the geometrical center of the chucks, without reference to the shape, size, or position of the object.

This lathe was patented by the inventors July 6, 1858, and by addressing them as above, any information or machines can be obtained.

BLAKE'S STONE BREAKER.



The great necessity which exists for a good and efficient stone-breaker is appreciated by all engineers, roadmakers, and lime burners, and at last the want has been supplied by Eli W. Blake, of New Haven, Conn. The qualities necessary in a good and efficient machine are that it should be strong, durable, and compact, and that it should exercise a great force through a small space. The stone-

breaker which is the subject of our illustration fulfills all these conditions, and not only breaks the stone or other hard substance, but delivers them nearly all of equal size, which can be easily regulated by the attendant or operator placing in breaking blocks of proper size.

Our illustration is a perspective view of one of these machines resting on two wooden

blocks, A, the rest of the machine being cast iron. B and C are supports of the frame, C, B being also the box or space in which the crushing jaw works. D is a lever, one end of which rests upon B, and the other is held in a link, E, which hooks at F on to a crank, G, rotated by a fly wheel, H, and handle, I, or other means. In a semi-circular recess in D, the piece, K, fits, and two pieces, J, one each side of N. These pieces have rounded ends, and they fit or move in semi-circular grooves in the back of the frame, O, and the breaking jaw, L. This jaw is of chilled iron, as are the block, M, and side blocks, A. From the jaw, L, a rod, N, extends back, and a spring, P, has always a tendency to draw it back nearer the back, O. The jaws are nearer each other at the bottom than at the top, so that as the stones are dropped between the jaws they will first be broken a little, and as they fall down between the jaws by their own gravity, they will be broken more, until they are sufficiently small to pass out on to a screen beneath, or on to a simple heap.

The operation is simple and perfect. The rotation of the wheel elevates the link, and with it the lever, D, and piece, K, which presses J J out, and so pushes L nearer M, the force exerted breaking the stones between the curved surfaces of the jaws. There has been one of these stone-breakers at the Central Park in this city some time, where it has given the greatest satisfaction.

It was patented June 15, 1858, and any further information may be had by addressing the inventor as above.

Effect of Heat upon Meat.

Professor Johnston, in his "Chemistry of Common Life," says that a well cooked piece of meat should be full of its own juice, or natural gravy. In roasting, therefore, it should be exposed to a quick fire, that the external surface may be made to contract at once, and the albumen to coagulate, before the juice has had time to escape from within. The same observations apply to boiling; when a piece of beef or mutton is plunged into boiling water the outer part contracts, the albumen which is near the surface coagulates, and the internal juice is prevented either from escaping into the water by which it is surrounded, or from being diluted or weakened by the admission of water among it. When cut up, therefore, the meat yields much gravy, and is rich in flavor. Hence a beefsteak or mutton chop is done quickly, and over a quick fire, that the natural juices may be retained. On the other hand, if the meat be done over a slow fire its pores remain open, the juice continues to flow from within as it has dried from the surface, and the flesh pines and becomes dry, hard, and unsavory. Or, if it be put in cold and tepid water, which is afterwards brought to a boil, much of the albumen is extracted before it coagulates, the natural juices for the most part flow out, and the meat served is in a nearly tasteless state. Hence to prepare good boiled meat it should at once be put into water already brought to a boil. But to make beef tea, mutton broth, and other meat soups, the flesh should be put into cold water, and this afterwards very slowly warmed, and finally boiled. The advantage derived from simmering—a term not unfrequent in cookery books—depends very much upon the effects of slow boiling, as above explained.

AN ELEPHANTINE PASSENGER.—Amongst the passengers at the Lyons (France) railway terminus, a short time since, was an elephant, booked from Abyssinia to Paris.



Issued from the United States Patent Office
FOR THE WEEK ENDING AUGUST 24, 1888.

[Reported officially for the Scientific American.]

* Circulars giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the Scientific American, New York.

MACHINERY FOR MAKING ROPE—Newton Adams, of Lancaster, N. Y. : I do not claim broadly the idea of making the rope which carry the capstan and reel revolve, when the bearings of the strand flyers are stationary.

Nor do I claim the giving of rotary motion to the bearings of the strand flyer, when the bearings of the flyers which carry the capstan and reel are stationary.

Nor do I claim anything which is seen in W. Joslyn's patent, 1840.

But I claim the combination of a revolving flyer containing a capstan, F, and reel, G, with the revolving strand flyers, B, revolving around the laying spindle, C, substantially as and for the purposes set forth, producing and controlling the rotary motion of the strand spindles or flyers on their own axis, by means of the stationary or moving belt, L, acting on pulleys on the said spindles or flyers, the pulleys, N, worm wheel, U, and stationary or moving endless screw, Z, the whole being combined to operate substantially as set forth.

[This invention consists in the addition to the sun and planet rope machine of a revolving coiler, flyer or reel, so applied and operated as not only to coil up the rope as fast as it is laid by the planetary motion, but also give it an additional twist, thus enabling a much greater quantity of rope to be produced than can be made in the sun and planet machine, as ordinarily constructed, in which the quantity produced is limited by the velocity of the planetary revolution of the strand spindles around the laying spindle, which velocity cannot be safely increased beyond a certain degree, owing to the tremendous centrifugal force generated. By giving the revolving coiler, flyer or reel a rotary motion at the same velocity as the laying spindle, this machine will make, in a given time, twice the quantity of rope that can be made by the same machine without it. The machine is beautifully designed, and so simple that there is very little mechanism to be seen about it.]

VAPOR LAMP BURNERS—Solomon Andrews, of Perth Amboy, N. J. : I claim, first, The combination of the wick tube, the glass chamber, and the electric conductors in a gas lamp as described, or its equivalent.

Second, I claim a cotton, or other fibrous wick, made hollow by a wire gauze tube or its equivalent, for the uses and purposes specified.

LATHES FOR TURNING BEADED WORK—Frederick Baldwin, of South Wardsboro, Vt. : I am aware that hollow mandrels and rotating cutter disks have been previously used, and also that movable cutters operated by patterns have been used and arranged in various ways.

I therefore do not claim, separately and irrespective of arrangement, the parts shown.

But I claim, first, The stationary mandrel, H, provided with the movable or adjustable dies, d, and spurs e, rotating cutter disks, F, G, provided respectively with the cutters, I, C, the feeding nut, f, and the rotating pattern, Q, actuating the cutter, C, through the medium of rods, collars, Y, Z, and plate, B, the whole being combined and arranged to operate substantially as and for the purpose set forth.

Second, The guide, L, and wheel, K, provided with the stop pin, J, pin, and bar, m, in connection with the slides, H, connected by the spring, t, the lever, W, clutch, V, and collars, U, U', with the pins, v, the whole being combined and arranged substantially as and for the purpose specified.

Third, The feeding nut, f, placed in the cutter disk, F, in combination with the stationary mandrel, H, and cutter disk, G, substantially as described.

[This invention consists in the employment of a rotating pattern in connection with rotating cutter disks, hollow stationary mandrel, and feeding device, the whole being arranged so that the several parts are made to work automatically, and a simple machine obtained—one capable of working rapidly, and at the same time performing its work in a perfect manner. The invention is designed for turning beaded work on cylindrical sticks, such as broom and tool handles, chair rounds, &c., the sticks being taken in the rough, and turned and beaded or ornamented simultaneously.]

RAILROAD RAILS—Sidney A. Beers, of Brooklyn, N. Y. : I do not claim the exclusive use of cast or other iron as a material for railway track.

But I claim the construction of cast or other iron rails, as set forth, when combined in their formation with the lug or cleats, b b and c c, as shown, for the purpose of receiving a flat iron plate or wedge for securing the ends of the rails evenly together, and giving the rail additional strength at the point of connection.

SPINNING MULES—James H. Brickell, of Taunton, Mass. : I claim first, Arranging the winding gear, H, loose on a stationary bushing, C, or its equivalent, which surrounds and forms one of the bearings of the winding shaft, and applying a pulley, E, attached to said gear, a spring, D, fitted to the bushing, to engage the gear, with a ratchet wheel, F, fast winding shaft, in the manner described, whereby the winding shaft and winding gear are permitted to be entirely disconnected during the operation of backing off.

Second, The combination of the adjustable cam, A, on the rock shaft, P, the loose pulley, B, working on the stationary bushing, C, or its equivalent, surrounding the winding shaft, the pawl, E, on said pulley, the clip spring, V, on the bushing, and the ratchet wheel, E, on the winding shaft, the whole operating together substantially as described to effect the backing off of the yarn.

And in combination with the pawl, E, I claim the pin, G, applied as described, to disengage said pawl, and permit the reversal of the shaft to wind on the yarn.

Third, The combination of the brake wheel, Y, on the winding shaft, the brake, X, and the tooth, h, on the belt snapper, substantially as described, for the purpose of stopping or reducing the momentum of the winding shaft previous to the operation of backing off.

[These improvements are especially adapted to the self-acting mules patented by William Mason, and their object is to effect the "backing off" in a positive manner.]

ADDOMETER—James Burns, of New York City : I claim first, The toothed wheels, I 1 2 3 4, when arranged in the particular manner described relatively to the are index plates, J, in combination with the toothed wheels, 5 1 2 3 4 5, of the registering cylinders, a 1 2 3 4 5, and stop, J, substantially as and for the purposes set forth.

Second, The particular arrangement in combination with the above, of pins, 1 1 1, on the sides of the finger wheels, I 1 2 3 4, toothed segments, K 1 2 3 4 K 5, and pin, c, on the sides of the registering cylinders, a 1 2 3 4 5, for the purpose set forth.

[This is a simple and good machine for adding numbers, and it is quick and sure in its operation.]

Coupling for Railroad Cars—James Campbell, V. R. Lehigh, and Patrick Shannon, of Steubenville, Ohio : We claim the link, A, made rounding at the point, with square offsets on each side, in combination with the jaws, B, R, the spring, C, chain, D, and hand wheel, E, or its equivalent, when constructed, arranged and operated in the manner and for the purpose substantially as described.

APPARATUS FOR COOLING AND VENTILATING GRAIN—Charles D. Clark, of Chicago, Ill. : I claim the arrangement of cylinder, B, provided with rectangular grates, and the blast pipe, A, and separating cone, F, operating in connection with the blast through the pipes, E, substantially as and for the purposes described.

ROOFING COMPOSITIONS—Abram Davis, of Chicago, Ill. : I am aware that nearly all the ingredients which I use have been before used for like purposes; but they were dissolved in a manner and with solvents essentially different. I do not, therefore, claim them broadly or separately.

Nor do I claim the apparatus described.

But I claim the method of applying a cement having the composition set forth, namely, by first saturating canvas, or other suitable fabric for roofing, with asphaltum, softened and tempered with crude kerosene oil, or its equivalent, in the manner mentioned, and secondly, by covering this layer or foundation with a cement formed of india rubber and other ingredients, substantially as set forth and for the purposes specified.

CARPENTER'S WORK-BENCH—Justin Devore, of Randolph, Pa. : I claim first, In regulating the inclination of the cutting instrument to the angle required, to give the edge of a board a given bevel by raising or lowering one of the jaws of the clamp between which the board is held, substantially as described, or in an equivalent manner.

Second, Combination of the bevel boards, arranged as described, with the jaws of the clamp, for the purpose set forth.

QUARTZ CRUSHERS—A. J. Doolittle, of Nevada Township, Cal. : I do not claim the employment of springs for the purpose of increasing the force of the blow, as this can be seen with many similar machines.

Neither do I claim broadly the openings in the pans.

But I claim arranging the stampers of a quartz crusher in such a manner that they are guided in their up-and-down motion by two springs, which at the same time serve to increase the force of the blow, in combination with pans having the openings in the stampers, so that they are free to rotate under the action of the blows, and which have openings in their sides, the size of which is different for different pans, and depends upon the relative coarseness of the quartz, so that the finer parts of the quartz escape, and the coarser ones are continually exposed to the full force of the blows, the whole being arranged substantially as set forth.

[In this machine flat springs are employed, to which the stampers are connected, for the double purpose of guiding the stampers in their up-and-down motion, and of increasing the force of the blow, and the pans or mortars are so arranged that the finer parts of the quartz or other substance crushed can escape by openings made into the side of the pans, so that the larger lumps are always exposed to the full force of the blow. These openings gradually increase in size in different pans, so as to effect the required degree of fineness by the time the substance has passed through the several pans.]

WRITING DESK—John W. Fleeter, of New Lexington, Ohio : I claim the arrangement of rollers, A, A, with coiled springs attached, with the horizontal cords, C, on pulley, z, the canvas arranged on the rollers and scales, and the hand board, c, hinged to the desk, as and for the purposes specified.

SEWING MACHINES—R. D. Fitts and Milton D. Whipple, of Charlestown, Mass. : We claim, first, The "keel guide," a, beneath the pressure foot operating as set forth, for the purpose specified.

Second, We claim causing the shank of the needle to play vertically in guides, and connecting the pitman directly thereto, as described.

Third, Securing the needle in place by means of the pin, f, when its shank is provided with a notch to insure its proper position with respect to the hook and the table, as set forth.

Fourth, We claim the peculiar arrangement of the bar, K, and its post, o, with the bent lever, l, and sliding plate, m, and spring, n, operating as and for the purposes set forth.

CAR SEATS AND COUCHES—I. N. Forrester, of Fairfax Court House, Va. : I claim first, Combining with car seats, D, C, an auxiliary back and bottom, which are adjustable, said auxiliary back and bottom, C' D', being arranged and operating substantially as and for the purposes set forth.

Second, The ratchet teeth, B B', and spring pawls, F E, combined and arranged in the manner and for the purposes set forth.

SEEDING MACHINES—Joseph Fowler and F. M. Bacon, of Ripon, Wis. : We claim the combination of the rotary perforated cylinder, E, board, H, and toothed bar, I, arranged for joint action as described.

[This is a novel seed-distributing device for scattering or sowing seeds, and a drag or harrow attachment is used with it, so that the seed will be evenly sowed and properly covered with earth, the whole being entirely under the control of the operator.]

CARTRIDGE FOR FIREARMS—Edwin Gomez and William Mills, of New York City : We do not claim cartridges formed of explosive paper or other material.

And we do not limit ourselves to any particular explosive compound made use of in our cartridge.

But we claim the manner specified of forming cartridges for firearms, and other purposes, by alternate layers of explosive material and paper, or similar substance, for the purposes and as specified.

We also claim the winding of string or equivalent material attaching the case to the base of the ball, for the purpose of retaining said case any refuse matter from the barrel, as described and shown.

MACHINES FOR CUTTING UP CORNSTALKS IN THE FIELD—Francis M. Green, of Sullivan, Ill. : I claim the knife cylinder, D, constructed and operating as described, in combination with the supporting wheels, e, g, and the mechanism for operating the same, the whole arranged substantially as described, for the purposes set forth.

PORTABLE FIELD FENCE—John B. Johnson, of Linden, Ind. : I claim the mode of locking the panels at the top, as described, so as to prevent their being drawn apart longitudinally or endwise; and also the mode of locking the panels at the bottom, as described, so as to prevent them from being pushed or slipped by one another, when the panels are arranged in relation to each other, as set forth.

CROSS-CUT SAWING MACHINE—Albert Heth and Gaylon Hall, of Adams Center, N. Y. : We claim the lever G, and oscillating platform, D, connected by the rods, F, F, and attached to the saw bar or beam, J, by the pendant, I, the above parts being used in connection with the beam, A, and cross bar, B, for the purpose set forth.

[This invention is more especially designed for sawing logs into cord wood for fuel, and consists in a novel means for operating or applying power to the saw, whereby the weight of the operator is made to assist his muscular strength, and both are applied in the most advantageous manner.]

METALLIC SPRINGS—James Harrison, Jr., of New York City : I claim the coiled spring described, having the several revolutions of the coil approximating to the form of cones, or in other words, having the sides of its several coils inclined to the axis thereof, substantially as specified.

SEEDING MACHINES—Paul Hildreth, of Beloit, Wis. : It is the arrangement of the cone or graduated pulleys, F and H, and the feed auger, 1, in connection with the revolving distributing cylinder, 6, and the distributing adjustable feeder, C, that I claim as my invention, and no more.

SEWING MACHINES—Elias Howe, Jr., of Brooklyn, N. Y. : Having described my invention, and the manner which I have deemed best for embodying it in mechanism, I wish to be understood that it is not limited to the precise construction described, but that it may be modified as circumstances may render expedient to adapt it to different sewing machines, or to meet the views of different constructors. Thus for example, if a curved shuttle race is employed, as is the case in some machines, the arm, F, may be pivoted at the center of the circle of which the race is an arc, and its extremity may terminate in the recess at the butt of the shuttle, thus driving the latter directly without the interpolation of the connecting bar or driver, D.

I am aware that the shuttle of a sewing machine has been operated by seizing by one of its ends in a forceps; but the construction and operation of the mechanism in this case is such as to render it necessary to apply the driving apparatus to the shuttle, and to disconnect it therefrom at each movement of the shuttle.

I do not, therefore, claim imparting motion to a reciprocating shuttle by seizing one of its ends intermittently by a forceps.

But I claim imparting a reciprocating movement to the shuttle of a sewing machine by the application of a driver to one point only of its length, substantially as set forth, in such manner that the driver need not be disconnected from the shuttle.

I also claim constructing the shuttle driver in such manner that it is guided by a race parallel with the shuttle race, or its equivalent, and is at the same time supported and prevented from sinking out of its proper position by pivoting its stock perpendicularly to the table of the machine, in a socket in the arm which imparts motion to it, substantially as set forth.

RUNNING GEAR FOR RAILROAD CARS—James Ingersoll, of Grafton, Ohio : I claim first, The manner described of constructing the rollers with long or short axles, so that they shall extend down along the sides of the rails of the railroad, and the axles rest upon said rails substantially as and for the purposes set forth.

Second, The employment of an internally toothed endless chain and an externally toothed driving wheel, in combination with an endless elliptical guide way, and an endless series of rollers, substantially as and for the purposes set forth.

WASHING MACHINES—William A. Jordan, of Thibodeaux, La. : The tub and disk or rubber are well known in common use for washing clothes, and I therefore do not claim separately such device.

But I claim the combination of the tube, C, slotted shaft, F, and pin or key, G, attached respectively to the tub, A, and disk or rubber, U, and arranged to operate as and for the purposes set forth.

[This invention is designed to improve tub-washing machines, and provides for the proper adjustment of the rubber while the clothes are being placed in the tub.]

MUSIC STOOL—Edwin Leach, of Norwich, Conn. : I do not claim broadly constructing a music stool of metal, for stools thus constructed are in common use.

But I claim the rods, f, annular or serpentine base, A, boss, C, nut, D, and screw, E, when arranged or disposed substantially as shown, for the purpose set forth.

[This invention consists in constructing the stool of metal in a novel way, whereby a strong, light, ornamental and economical stool is obtained.]

BED BOTTOM—Rufus Leavitt, of Cambridge, Mass. : I claim the construction of an elastic bed bottom, by means of a series of springs constructed and arranged substantially in the manner described.

MACHINES FOR BREAKING HEAVY—Samuel H. Little, of St. Louis, Mo. : I claim the combination with the main beating cylinder, F, rotating in a fixed vertical plane on the permanent frame of the machine, the arrangement of the feeding apron, breaking and crushing rollers, and concave in a second frame adjustable on the first one, so that when it becomes necessary to adjust the concave to the beater, the parts preceding the concave in the operation shall always maintain the same relative positions to it and to each other, as set forth.

I also claim the arrangement and operation of the beater cylinder, F, the concave, J, the reel, f, and carrying apron, g, all as described and represented, and for the purpose specified.

ROTARY HARROWS—William H. Main, of Liverpool, Ohio : I claim the manner described of causing a harrow to rotate, namely, by means of the standard, E, the slot, H', in the bar, H, and spring, K, operating in the manner set forth.

I also claim the manner of raising the harrow from the ground by means of the adjustable bar, H, and recesses, L' L', as described.

These several devices, combined as described, I claim in combination with a seeding machine, for the purpose set forth.

RAILS FOR SWITCHING CARS OFF THE TRACK—John C. Mather, of New York City : I claim providing the shoe, A, with two frogs, C and D, in the manner and for the purposes substantially as set forth.

HARNESSES—Frederick Monroe, of Romeo, Mich. : I claim the combination of the rigid bow whiffletrees, A, with the front coupling bar or tree, B, connected by swivel joints, c, c', said bows having hooks or other appliances for connecting the ends at F F' with an ordinary plow harness, constructed and operating in connection with the central draft bar or chain, in the manner and for the purpose specified.

HORSE RAKES—Merrick Morgan, of Lancaster, Pa. : I claim the arrangement of the axle, G, and clearers, o, with teeth, I, having curved ends, J, hinges, G, and roller, E, the whole being constructed for joint operation as and for the purpose set forth.

HARROWS—Daniel B. Neal, of Mount Gilead, Ohio : I claim the combination of the troughs, B and C, (one oscillating and adjustable, the other being stationary, and both provided with bail), with a revolving harrow as described, substantially in the manner and for the purpose set forth.

ICE STAND—Henry A. Roberts, of Hartford, Conn. : I claim as a new article of manufacture, an ice stand, with convoluted angular shape drip supports, A, constructed and arranged in an adjustable frame, F, with the cross channel, C, flexible discharging tube, D, rollers, E, substantially in the manner and for the purpose described.

ELASTIC FABRICS—John W. Newell, of New Brunswick, N. J. : I claim an elastic fabric, formed by the application of an elastic gum to the side of braid, substantially as described.

OVENS—E. Graves Otis, of Yonkers, N. Y. : I am aware of the use of spiral flues in hot air furnaces, and do not wish to be considered as claiming such.

But I claim first, The construction of ovens with the floor upon which the baking takes place running spirally around the inside of the oven, substantially as set forth.

Second, The rotary cylinder, D, constructed, arranged and operating substantially as and for the purposes set forth.

Third, Placing the spiral chamber in which the baking is performed in communication with the hot air chamber, W, above the fire chamber, by means of the chambers, G, and the openings controlled by the dampers, h, for the purpose of regulating the temperature in the several portions of the said spiral chamber, substantially as set forth.

METALLIC BANDS OR TIES FOR BALES, &c.—Increase C. Plant, of Macon, Ga. : I claim the bale tie or lock made open at one edge and both ends so that the band may be inserted in it edgewise, in the manner substantially as described.

SEEDING MACHINES—D. B. Kelper & A. C. Fox, of Texarkana, Texas : We claim the combination of the endless band, F, oscillating arms, h, and adjustable plate, K, arranged relatively with each other as shown, whereby the seed is properly agitated and kept, when reduced within the box, A, within the reach or path of oscillation of the arms, h.

[In this machine a perforated endless band is employed, which is fitted in a seed box for distributing the seed. In connection with this band a reciprocating rotating agitator is used, for the purpose of preventing the seed from clogging, and ensuring the proper discharge of the seed from the seed box.]

PACKAGES FOR DRY GOODS—Alexander Robertson, of Upper Holloway, Middlesex co., England. Patented in England, June 29, 1888 : I do not intend to confine myself to any particular kind or description of wood, although I prefer wood of close grain and texture, and in some instances I line or cover the inside of the package with tin foil or paper.

I claim new manufacture and process and method of manufacture of packages for dry goods, by the combination of wood and iron or other metal, and constructed and made in manner described.

STEAM COCK—Robert Ross and Willard Holland, of Philadelphia, Pa. : We claim, first, The loose valve plug, a, fitted to the seats, c and e, above and below, as set forth.

Second, In combination with the loose valve plug, a, and the shoulder, c', on the stem, b, we claim the nut, d, with its plane and concave faces, n n', as described.

Third, We claim the projecting stem passing through the loose valve plug, and fixed fast to the guides, x, x, as set forth.

Fourth, In combination with the valve stem, we claim the upper spring valve, v, as set forth.

MACHINERY FOR BOLTING FLOUR—Benjamin D. Sanders, of Holliday's Cove, Va. : I claim depriving superfine flour of fine oil or impurities, by rebolting it, after escape from the head of the first reel, C, in or by a second reel, C2, apart from the main body of meal or coarse meal and coarse oil in the first reel, substantially as specified.

And I further claim rebolting the coarser grades of fine oil and material, admixed therewith, passing off at the tail, e, of the second reel, or by in a third reel, C3, for restoring to the superfine flour that which belongs to it, and for the more perfect separation, without waste, of impurities therefrom.

HARPOON LANCES—Nathan Scholfield, of Newark, Conn. : The use of a sliding case or a collar carrying guiding wings on the surface of a cylindrical projectile, I am aware is already secured to me by my patent of March 10th, 1887 : therefore I do not in this claim their application, but only the peculiar manner of that application to the projectile.

Neither do I claim the use of cushions, packing or springs on the projectile or cases, to neutralize the rigid effects of concussion of the cases on the rear flange of the projectile, for this feature is embraced in the patent granted to me on the 8th of December, 1887.

Neither do I claim the construction of harpoon lances with a joint in its stem, shaft or shank, nor the attachment thereof of a holding line by means of a ring placed on its forward part, outside the bore of the gun, and sliding so as to take a position in the rear when discharged, for this has been previously practiced.

What I claim is, first, The several modes described of applying the sliding and extension cases, E and F, either with or without spurs, Q, on the anterior part of a cylindrical projectile, so as to extend either wholly or partially without the bore of the gun before its discharge, and while the projectile is in its position therein.

Second, Attaching the ring or collar holding the line of a harpoon lance to be fired from a gun to the rear end of a sliding case, F, with or without spurs, Q, and on which a portion of the said line may be coiled if desired, preparatory to being projected, substantially as described.

Third, Connecting a lance head and shank of a harpoon lance to be fired from a gun to a cylindrical shell, by a sliding socket joint, J, so that when forced in or in place the joint shall remain rigid and inactive, but when drawn or forced out, it shall be susceptible of flexibility by turning on its pivot.

BOLT MACHINE—Elisha Simkins, of Alleghany, Pa. : I claim, first, The flexible connecting rod, h, and the arrangement of the cylinder, e, the spiral springs, f, and nuts, g, as described, and for the purposes set forth.

Second, The arrangement of the lever, i, the ratchet wheel, j, the level wheels, k and l, the screw, y, and the cross-head, d, when used in connection with the flexible connecting rod, h, as described and for the purposes set forth.

Third, The arrangement of the compound lever, u, and the pulleys, v, in connection with the lever, t, and stop, r, as described and for the purpose set forth.

Fourth, The arrangement of the stud, 15, the stop, r, the levers, p and q, and the bolster, s, as described and for the purpose set forth.

WINDLASS—Samuel N. Smith, of New York City : I claim the lever, L, provided with the rack, K, which gears into the rack, J, in connection with the rods, M, M, and levers, N, N, connected by the links, O, with the arms, I, I, of the boxes, H, H, the whole being arranged for joint operation, as and for the purpose set forth.

[This invention consists in the peculiar means employed for applying or transmitting power to the windlass shaft, whereby the strength of the operators may be applied to the windlass very uniformly, and in the most advantageous manner.]

GAS REGULATORS—W. G. Sterling, of Bridgeport, Conn. : I do not claim the gasometer attached to a valve, as this is an old device.

First, I claim the described adjustable conical-shaped valve seat, with its cross bar, or its equivalent, and valve attached.

Second, I claim the set screw, in combination with the valve seat, or any other construction substantially the same.

Third, I claim the combination of the movable valve seat, valve, and cross bar, attached in any form or manner to a gasometer, disk, diaphragm, or other device, by which said regulator can be cleaned without the least derangement to the machine as described, or in any other form or way equivalent thereto.

ESCAPE—Owen Sweeney, of Brooklyn, N. Y. : I claim the drum, D, with rope, E, attached, brake, F, and compensating spring, J, and vibrating or tilting plat-

form or board, C, placed within the box, A, combined and arranged to operate as and for the purpose set forth.

I further claim the particular arrangement of the rack bar, H, pall, I, platform or board, C, and strap or brake, F, as shown, whereby the person that descends solely by his own gravity releases the drum from the brake, and causes the car or basket to ascend, and also by the same means regulates for his descent the pressure of the brake on the drum, as described.

[A drum with a rope and basket attached, a brake and platform, compensating spring, are employed in this invention, so arranged that a person can descend from a window in the upper stories of a building with perfect safety, the device being automatic in its action, requiring no attention after it has been once attached to the window sill.]

WATER METERS—Franklin A. Tenney, of Concord, N. H.: I claim the arrangement of the shifting weight, c, the spring valves, 11, and the pins, R K, or the equivalent of said parts, with the double chambered vessel, B, substantially in the manner and for the purpose set forth.

APPARATUS ATTACHED TO STEAM COILS IN VES-—John Frager, of New York City: I do not claim arranging steam coils on shafts or journals to swing to a vertical position, for the purpose of cleaning out the vessels in which they are placed.

But I claim providing ratchets, 11, on the peripheries of the couplings, and palls, j, attached to the stationary supply and escape pipes, a, b, to prevent the working loose of the coupled joints by the swinging of the coil.

[This invention consists in a novel arrangement of the pipes, journals, and joints of a steam coil, whereby a uniform distribution of heat throughout the whole horizontal area of the boiling or heating vessel is obtained. Provision is also made for raising the coil to clean the bottom of the vessel, without any danger of disturbing the joints, and great facility is afforded for applying the coil within the vessel.]

COMPOSITION FOR MINIATURE CASES, &c.—Mark Tomlinson, of Birmingham, Conn.: I do not claim broadly the employment of shellac in compositions. But I claim the composition for useful and ornamental articles, made of shellac, Breckenridge or Cannel coal, and ivory black, in about the proportions and in the manner substantially as set forth.

[This composition consists of equal parts, by weight, of shellac, Breckenridge or Cannel coal, and ivory black. The shellac and Cannel coal are first finely pulverized, separately, and the three ingredients are then well mixed together, and fed between a pair of steam heated rollers, one of which rotates at a higher velocity than the other, and thereby ground into a pasty mass, which, while still hot and plastic, is cut or divided by a spatula or other instrument into cakes of sufficient size to form the articles or pieces to be made. These pieces are laid upon a plate or tray, and placed in an oven heated by steam or other agency, and allowed to remain therein a short time, after which they are taken out, and while still hot are placed in steam heated dies of the requisite form to produce the articles or forms desired, and therein subjected to a heavy pressure. The pieces or articles are then allowed to cool in the dies to a degree sufficient to enable them to be taken out without any danger of bending, or otherwise injuring their form.]

TEMPERING WIRE AND STEEL—Henry Waterman, of Brooklyn, N. Y.: I claim the process of hardening steel wire or thin steel, in long sections, being kept under a longitudinal strain by means of the wheels, D D', while passing through the fire in the furnace, C, the guide, H, to conduct the wire directly from the fire into the hardening bath, in combination with such hardening bath as specified.

CORN PLANTERS—Horace Whitman, of Kingsville, Ohio: I claim the adjustable or articulating frame, C, hinged to the machine, and provided with teeth and blades in combination with the rock shaft, Q, weighted lever, T, and lever, I, when arranged in relation to a seeding machine, substantially in the manner and for the purpose specified.

CORN SHELLING MACHINES—Loren J. Wicks, of Racine, Wis.: I claim the employment of the screen, Q, in the apron, P, in connection with the tube, N, provided with valves, O and O', grating, T, when the several parts are constructed and arranged with respect to each other, and to the shelling wheel, F, and cylinders, D and D', and operated conjointly therewith, in the manner and for the purpose specified.

ATTACHMENTS TO ARTIFICIAL LEGS—Oliver David Wilcox, of Elmira, N. Y.: I claim providing for the adjustment of the sack, H, by means of straps and buckles applied substantially as described.

[This invention consists, firstly, in a certain system of levers connecting the leg with the thigh piece and foot, for the purpose of controlling the proper operations of the leg and foot in walking. It also consists in the employment of a spring to give elasticity to the ankle joint. It further consists in providing for the adjustment of the sack, which the inventor patented September 30th, 1865, to adapt it to the condition of the stump, by means of straps and buckles.]

LOCOMOTIVE ENGINES—Ross Winans, of Baltimore, Md.: I do not limit myself to the precise form and construction of the parts which I have described, as these may be varied without affecting the principle of my invention.

But I claim the combination with the smoke box of a locomotive steam engine of a blast pipe, extending from within the lower end of the chimney downwards to near the lower flues, an annular space between the upper end of the blast pipe and the chimney, a diaphragm near the lower end of the blast pipe and between the latter and the bottom of the smoke box, and a nozzle directing a jet of steam into the blast pipe, the several elements of the combination being arranged and operating substantially as described.

I also claim the construction of the diaphragm with its upper surface sloping towards the exhaust nozzle, to cause the coals and cinders to run down by their own gravity beneath the blast pipe, thereby bringing them within the sweep of the draught, and so rendering their discharge more speedy and more certain.

OBSTETRICAL CHAIRS—C. C. Wings, of Newport, Va.: I am aware that obstetrical supporters have been used with pads on the back and in front of the knees of the patient, and have been operated by means of straps and handles so far as to produce results somewhat analogous to those produced by my arrangement. I therefore do not claim as new any and every arrangement of the pads and straps which would produce like results.

But I claim passing the strap or cord, b, through the standard, H, of the portable chair, at a point on a level, c, on a level or nearly so with the pad, a, and the cord, a, around a pulley in the back of the chair, and a little above the seat of the same, substantially as described, so that the operation of the straps or cords will be in the direction in which the support is most needed, and the counter pressure, produced by the action of the two pads, a and G, may have the fullest effect.

I also claim the adjustable hands, slats, c, c, and the foot pieces, J J, when arranged and combined with a portable chair, substantially as described, for the purpose of adapting the chair to different persons.

MACHINE FOR SETTING THE STAPLES IN BLIND SLATS—James Wyman, of Schaghticoke, N. Y.: I claim, first, the arrangement and combination of the vertically sliding punch, D, spring supporting and stop bar, F, spring feeding slide, G, and grooved sliding bar or anvil, B, substantially as and for the purpose set forth.

Second, in combination with the above, the ratchet teeth, K, of the sliding bar or anvil, B, dogs, M, spring pawl, L, and adjustable gauge plate, N, substantially as and for the purposes set forth.

LOCK—Hjalmar Wymblad, of West Hoboken, N. J.: I am aware that revolving wheel plates, with recesses on the periphery to receive the end of a pendular lever, have been used, and do not claim the same.

But I claim the arrangement of tumblers provided with cogs and notches, in connection with a projection on the bolt, and operating in the manner and for the purpose substantially as described.

VALVE GEAR OF STEAM ENGINES—James Ferguson, (assignor to himself and Lazell, Perkins & Co.,) of Bridgewater, Mass.: I do not claim any of the mechanism described for operating the cam shaft, as it is well known in the mechanism commonly employed for working valves with a tripping motion, nor do I claim, generally, operating valves by cams and yokes.

But I claim the employment of cams, E E', of the form specified, applied in the manner described, to connect the valve stems with the rock shaft, D D', which receive the tripping motion for the purposes set forth.

[This is a useful improvement in valve gear for engines, and cannot well be described without drawings.]

CHAIN STOPPER—Wm. H. Gray, of Dover, N. H., assignor to himself and A. G. Brown, of Salem, Mass.: I claim the improvement in chain stoppers described, which consists in hanging the butt of the pull on bosses cast on the inside of the two supporting standards or ears, in combination with the shoulders, h h, on said pull bearing against said standards, as described, the whole being arranged and operating as specified.

APPARATUS FOR ROASTING, TOASTING, &c.—H. W. Harkness and W. A. Terry (assignors to themselves and Joseph Signourney, of Bristol, Conn.: We claim the described roasting or toasting apparatus, consisting of case, C, clock movements, D, arms, B, spindles, A, pins, c, arranged and operating substantially in the manner and for the purpose set forth.

ANCHOR BALL—H. W. Harkness, of Bristol, Conn., assignor to himself and J. W. Bliss, of Hartford, Conn.: What I claim is, as a new article of manufacture, an anchor ball, A, with flukes, C, springs, D, grooves, B, staple, F, substantially in the manner and for the purpose described.

SEWING MACHINES—T. D. Jackson (assignor to J. W. Bartlett, of New York City): I claim, first, the employment of a yielding roller constructed as described, for the purpose of closing the barb of the needle during its movements, substantially as set forth and specified. Second, and in combination with a yielding roller, the swinging thread guide, to carry the thread in position for the needle to insure the stitch, as set forth.

CUT-OUT VALVES OF STEAM ENGINES—John Jackson, Jr., of Newburyport, Mass., assignor to himself and E. H. Ashcroft, of Boston, Mass.: I do not claim the devices or mechanism covered by the patents before mentioned.

But what I claim is my improvement or the combination of the levers, S and T, and the collar, U, as arranged and applied to the valve, R, of the ball governor, and to the slide rod, A, of the inclined plane, C, substantially in manner as specified.

HORSE COLLAR BLOCKS—R. W. McClure and George Marsh (assignors to R. W. McClure and I. H. Windsor) of Pike Hollow, N. Y.: We are aware that the individual members of this machine are not new, and hence we do not claim them as such.

What we claim is the peculiar arrangement of the mold block, B, and rim setter, C, with the cord, a, and stretcher, D, when the same are constructed, operated and combined in the manner set forth and for the purpose described.

TRAP FOR ANIMALS—Frederick Renthe (assignor to M. Lath) of Hartford, Conn.: What I claim is the notch curved yoke, B, its parts, and the combination of the same to form a rat trap, in the manner and for the purpose substantially as set forth and described.

CARPET STRETCHER—Henry Ridley (assignor to S. P. Thatcher and Walter Stillman), of Hartford, Conn.: I do not claim either of the devices separately considered, as described in my specification, as I am aware that they have been used before for different purposes, and for instance that described and represented in "Nicholson's Operative Mechanic," American edition, p. p. 357, 358.

But I claim the construction and arrangement of the clamps, I, strap, H, wheel, C, ratchet, E, pawl, G, in the frame work, B, substantially as and for the purpose as described.

BURNISHING MACHINE—L. S. White (assignor to E. W. Sperry, E. Harbut and J. H. Ashmead), of Hartford, Conn.: I have described this machine as specially adapted for burnishing spoons, oval handles, &c. It will readily be seen and understood that variations must be made for different kinds of ware, also that the same motion may be produced by different devices, do not therefore wish to confine myself to the particular way or mode of operating as described, as, for instance, the revolving motion of the jack may be produced by arms, levers, &c., instead of gear. Thus it will be seen by the use of this machine, the work of burnishing, hitherto unpleasant and disagreeable, can be rapidly and perfectly performed by machinery which hitherto has been done successfully only by hand work.

What I claim is the holding or rolling jacks, H, and the oscillating or vibrating stock, F, substantially in the manner and for the purpose as described.

RE-ISSUE.
MANUFACTURE OF HARD RUBBER GOODS—Gustavus Coppers, of College Point, N. Y.: I claim the hardening and vulcanizing of india rubber or gutta percha, by which the manufacture of perfectly shaped articles may be facilitated, substantially as described.

PUMPS—Hosea Lindsey, of Ashville, N. C.: Dated Dec. 4, 1865: I claim, first, The combination and arrangement of the vertical central conducting pipe, C, horizontal double chambered or double valve reciprocating and supplying cylinder, F, two alternately reciprocating pistons or plungers, F F, and piston connecting and guide rods, G G, substantially as and for the purposes set forth.

Second, Effecting the reciprocation of the piston or plungers, F F, by means of a curved inclined plane, I, arranged horizontally on the bottom of the well, substantially as and for the purposes set forth.

Keeping the Teeth Clean.

Microscopical examinations have been made of the matter deposited on the teeth and gums of more than forty individuals, selected from all classes of society, in every variety of bodily condition, and in nearly every case animal and vegetable parasites have been discovered. Of the animal parasites there were three or four species, and of the vegetable, one or two.

In fact, the only persons whose mouths were found to be completely free of them, cleansed their teeth four times daily, using soap. One or two of these individuals also passed a thread between the teeth, to cleanse them more effectually. In all cases the number of parasites was greater in proportion to the neglect of cleanliness. The effect of the application of various agents was also noticed. Tobacco juice and smoke did not injure their vitality in the least. The same was true of the chlorine tooth wash, of pulverized bark, of soda, ammonia, and various other popular detergents. The application of soap, however, appears to destroy them instantly. We may hence infer that this is the best and most proper specific for the teeth. In all cases where it has been tried it received unqualified commendation. It may also be proper to add that none but the purest white or Castile soaps should be used. We have been in the habit of using finely pulverized charcoal for this purpose, and have found it a most excellent dentifrice.

First Maple Sugar.

The important discovery that sugar can be made from the maple tree has been attributed to New England, and its date fixed as far back as 1765, in an article which has gone the rounds of the press. This statement has called forth a unanimous, indignant and patriotic protest on the part of the French Canadian press, and with pleasure we give currency to their claim for priority of discovery. They state that maple sugar was in general use in Canada previous to the Revolution, and long before *Dudley's Register* recorded, in 1765, its first manufacture in New England. Indeed, the Jesuit priest Charlevoix, in his *History of New France (Canada)*, wrote as early as 1721 an account of the process by which the sugar was obtained, stating that the sugar was unknown to the Indians, thus favoring its French origin. All honor, then, to the French Canadians for the maple sugar, unless our New England cotemporaries have records to substantiate their claim beyond the year 1721.

Cotton Manufacture.

The best cotton now costs, when delivered either in Providence or Boston, 13½ cents per pound. It has been steadily advancing in price for eight or ten years, notwithstanding a rapid increase of production. In 1848, the crop exported from the United States was 814,274,000 lbs.; the average price was 7-81 cents per lb. The crop of 1846 exported was 1,351,131,701 lbs., at 9-41 cents per lb. The exports of 1857 were 1,048,282,475 lbs., at 12-55 per lb. The home market in 1856 absorbed 640,000 bales of 400 lbs. each, or little less than one-sixth of the entire crop. At present prices, this amount of raw material would be worth \$31,000,000. It is impracticable to ascertain what additional value is given it by the labor, skill and ingenuity bestowed upon the manufacture, but it is probably no exaggeration to estimate the gross proceeds of this branch of industry in the New England States at \$150,000,000 per annum.

The Value of Coal.

Ere we wrap up this carboniferous integument of the landscape (says the eloquent Hugh Miller), let us mark to how small a coal field England has, for so many years, owed its flourishing trade. Its area, as I have already had occasion to remark, scarcely equals that of one of the larger Scottish lakes; and yet how many thousand steam engines has it set in motion; how many railway trains has it propelled; how many thousand wagon loads of salt has it elaborated from the brine; how many million tons of iron has it furnished, raised to the surface, smelted and hammered? It has made Birmingham a great city, the first iron depot of Europe, and filled the country with crowded towns and busy villages. And if one small field has done so much, what may we not expect from those vast basins laid down by Lyell in the geological map of the United States?

Important Hint in Washing Clothes.

The *American Agriculturist* asserts that the great secret of the success of nine out of ten of the washing fluids, mixtures, and machines which have been sold over the country for many years past, is not owing so much to the inherent qualities of the articles themselves as to the process of soaking, which they invariably recommend. If people pursuing the old-fashioned system of washing will simply take the precaution to throw all the clothing to be washed into water ten or fifteen hours before beginning operations, they will find half the labor of rubbing and pounding saved in most cases. Water is, of itself, a great solvent, even of the oily materials that collect upon clothing worn in contact with the body, but time is required to effect the solution. Every one is aware of the effect of keeping the hands or feet moist for a few hours—the entire external coating of secretion is dissolved. The same effect is produced by soaking for a few hours clothes soiled by the excretory matter of the skin.

QUEEN VICTORIA ACCEPTING A MECHANIC'S HOSPITALITY.—The English papers state that Queen Victoria has accepted the offer of Woodsey House, the residence of the Mayor of Leeds (Mr. P. Fairbairn), on her next visit to that town. Mr. Fairbairn is a manufacturer of machinery for woolen mills—a mechanic, in fact. This is probably the first time in the history of England that a reigning sovereign has accepted the hospitalities of any but nobles.

SOMETHING USEFUL.—The *Green Lake Democrat*, published at Berlin City, Wis., asserts that there are probably more well preserved volumes of the *SCIENTIFIC AMERICAN* in the United States than of any other weekly publication ever issued, and the causes which have led to their preservation are attributed "its exceeding usefulness as a work of reference upon machinery and patents, its well executed illustrations of new inventions, the clearness with which they are described, and the exceeding beauty of its typography."

STEAM SLEIGHS.—A Polish exile in Siberia has invented a means of applying steam power to the traction of sleighs, by which journeys can be made with rapidity over the frozen snows and the steppes covered with ice, which abound in the Russian dominions. Such an invention, it seems to us, might be valuable in this country for winter traveling over our broad prairies and ice-bound lakes.

FALL OF CEILING.—On the evening of the 16th of July a portion of the rich ceiling of the British House of Lords fell between two noblemen, who had a narrow escape—the falling mass actually grazing the head of the Earl of Shelburne. The fragment which gave way had "Dieu et mon Droit," in gothic characters inscribed upon it.

PROCESS OF RENDERING LARD.—Charles Wilson, administrator of Ebenezer Wilson, deceased, has applied to the Patent Office for an extension of the patent granted for the above process. The petition is to be heard at the Patent Office on the 20th of September next. This is an important patent, and much interest is felt in reference to it by parties engaged in the business.

NEW BULLET CASTING MACHINE.—A Berlin engineer has, it is said, invented a machine which can be worked by two men in the field, and will turn out 4,000 Minie rifle bullets per hour. Quite as much can be done by well-known machines invented in this country.

A WINE COMPANY has just been organized in Alabama, with a capital of \$25,000, all of which has been subscribed. It is called the "Mobile Wine Company," and has for its objects the growth and production of native wine.

ONE hundred and twenty vessels, loaded with 20,000 tons of coal, were entered at Boston in one day.

New Inventions.

Important Improvement in Steam Boilers.

The amount of fuel which is but half consumed, and remains as coal unburnt in the fire-box of a boiler, or escapes as smoke and carbonic oxyd instead of carbonic acid through the chimney, must, when we consider the number of boilers used for stationary, locomotive and marine engines, be immense. To save fuel has been the attempt of every person who has endeavored to improve the steam engine during the last few years, but the majority of inventions have had relation to attaining greater mechanical perfection in the engine, and although these inventions may do much, yet the chief waste of heat is not in the engine, but in the steam generating apparatus, to which part Mr. F. B. Blanchard has directed his attention. It has been laid down as a principle by one of the most eminent writers on the steam boiler and furnaces, that an artificial draft produced more perfect combustion than a natural one, and the excessive heat of the blast furnace, which, capacity for capacity, burns but little more than the reverberatory, whose heat is much lower, may be adduced as an illustration of the fact, and the invention which is the subject of our illustrations takes the fullest advantage of this principle.

Fig. 1 is a top view of the boiler and superheaters; Fig. 2 is a vertical longitudinal section of the same; Fig. 3 is a front view of the boiler, and Fig. 4 is a cross section of the boiler.

A is the fire-box and B the boiler; C is the front plate of the boiler in which are fire and ash doors, D, that close air tight, so that no air can go through them to supply the furnace, and they are only opened to start the fire or rake the bars, E, which are arranged as seen in Fig. 4. The coal is fed from the deck by means of a feeder, F, which is a tube or spout provided with two valves, *a* and *d*. The two arms, *c*, connected at the top, have between them a roller, *b*, which, pressing upon *a*, keeps it tight down, and this being thrown back, *a* is opened, and coals placed in, so as to fill the space between *a* and *d*; *a* is then closed, and the frame and roller, *c b*, put over it and *d* is opened, the coal falling on the distributor, *e*, which is shaken by the axle, *f*, passing through stuffing boxes outside the boiler, and so the fuel is projected evenly over the fire. The air is supplied underneath the fire bars by a pipe, H, from an air-pump worked by the engine, and keeping the fire-box full of air at about 1 to 1½ pounds pressure. The tube, G, communicates with H, and by the regulator or the cock, *g*, a given quantity of air can be supplied above the fire. The products of combustion pass through the tubes, I, into the smoke box, J, and when the fire is lighted the valves, *h h'*, are opened by the lever, *j*, and rod, *i*, to produce a direct draft up the chimney, O; when the fire is going the doors are closed, the air sent through from the air-pump, the valves, *h* and *h'*, closed, and the products of combustion pass through the return flues, K, into the box, L, which is covered with water, and from it through two flues, M, into the superheaters.

The steam when generated passes from the chamber, N, through the pipe, P, into the superheater, Q, and after it has received an additional quantity of heat from the products of combustion, it is conveyed through R to a high pressure engine. From this it comes back through the pipe, P', into the superheater, Q', and after receiving a quantity more heat to compensate for the loss sustained in the high pressure engine, and passes through pipe, R', to the low-pressure beam engine.

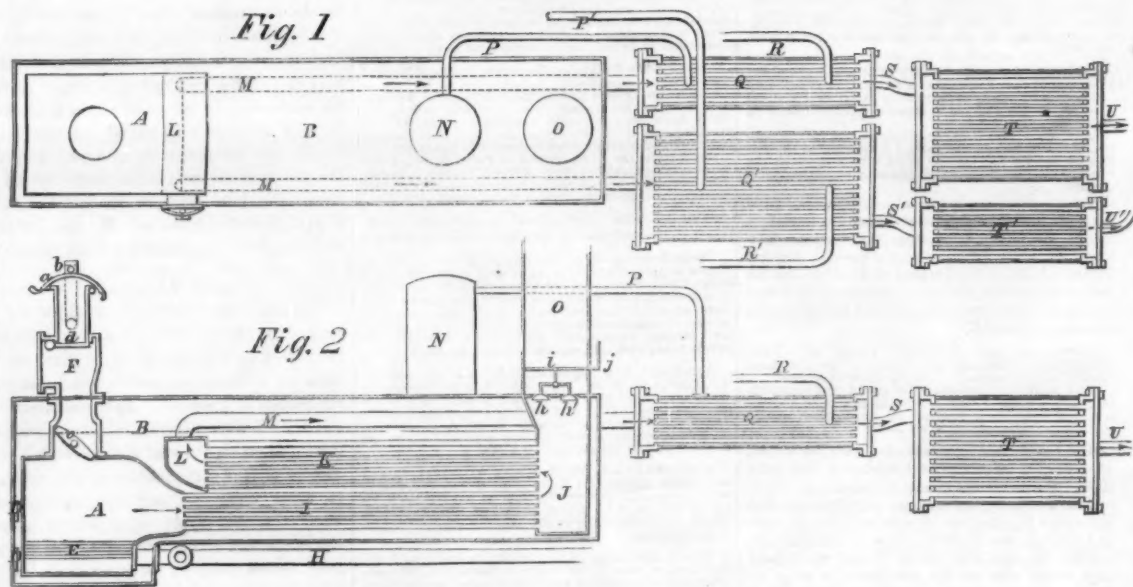
The products of combustion, after having heated the steam, are not yet to be thrown away, but are made to pass through tubes, S S', into heaters, T T', where the feed water and feed air are heated to a proper tempera-

ture, and they finally pass out by tubes, U U', into a small smoke pipe not over six inches in diameter, from which there issues, not smoke and carbonic oxyd, or flame, but nearly pure carbonic acid, at a temperature but exceeding that of the atmosphere a few degrees, showing the perfection of the combustion in the furnace, and great economy in the application of the heat.

Perhaps the best method of illustrating the many advantages of this arrangement will be to state some data made from hourly observations by ourselves on board the *John Faron*, on a trip from this city to Albany on Aug. 21, and all our mechanical readers will from them be able to judge for themselves of its great merits. The boat is not built for speed, and is 145 feet keel, 24 feet beam, and draws

about four feet of water. The cylinder of the engine is 36 inches in diameter and has 8 feet stroke; it is not particularly well framed, and was not built specially for Mr. Blanchard's improvements. With the ins and outs which we made to landings, the distance was about 160 miles, which we accomplished in twelve hours. The amount of coal used was 6,074 pounds or 467 pounds per hour, running time,

BLANCHARD'S IMPROVEMENT IN STEAM BOILERS.



from which must be deducted 446 pounds of coke and wood for kindling and 996 pounds of coal to start the fire, and 905 pounds of coal and ashes were taken from the furnace at the end of the trip.

The average pressure in the boiler was 64.7 pounds, and in the cylinder it varied at the different positions of the stroke from 30.8

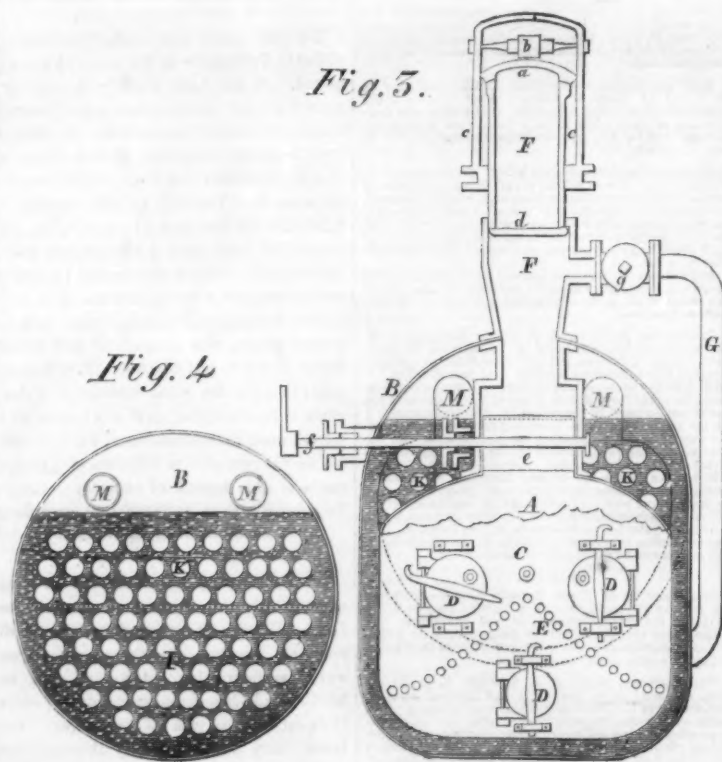
pounds to 38.0 pounds, having a temperature of 340°. The great point, however, was that the coal was weighed, and the water measured, and 12½ pounds of water were evaporated for every pound of coal, and the steam was heated 80° above the initial temperature. Calculating the horse power of the engine in the usual way, from the number of strokes

four inches square was placed across the machine used for proving chain cables, and a piece of chain was attached to a ring fixed in the center of it. A strain being laid on, the oak broke under a force of 3,900 pounds, the teak with that of 7,200 pounds, and the Honduras mahogany of 7,460. The oak and teak appeared as if crushed, but without a complete disjunction of the fibers; the mahogany showed long splinters, indicating a much longer grain or fiber than the others. M. Arman considers this result as a conclusive proof that mahogany is superior for many kinds of ship-building purposes, and although it is less flexible than good French oak, its permanent resistance under a direct strain is more considerable. MM. Le Mire & Son, builders at Rouen, also confirm the opinion of M. Arman, by giving an account of the results obtained in the use of mahogany in a vessel which they had built, the *Adele*, just returned from a long voyage. The captain, in a letter to the builders, gives a most satisfactory account of the state of the vessel, and expresses his decided opinion that the use of oak in ship-building may be advantageously replaced by mahogany.

ALUMINUM.—A new alloy under the name of "bronze aluminum" has been produced by M. Delalonne, of Valenciennes. It consists of one-tenth aluminum and nine-tenths copper; has the appearance of pure gold, is remarkably easy to cast and chisel, and is much less subject to oxydation, discoloration, &c., than ordinary bronzes or brass castings. It is suggested that this bronze, which is very hard, might be advantageously used for the bearings of machinery.—*Exchange*.

We think that the inventor is not M. Delalonne, but Dr. Percy, the English metallurgist, who exhibited this same material, or one having a similar composition, nearly three years ago at the Royal Institution, London.

REWARD TO THOSE FORMING CLUBS.—Any person who will get up a club of ten or more subscribers at our clubbing rates, can add his own name to the list, and we will send him the *SCIENTIFIC AMERICAN* free so long as the club is kept up. Will not our friends be induced to go to work and get up clubs on these terms? Do all you can for us this year.



per minute, the area of the piston and pressure of the steam, and then deducting one-tenth for friction, we find that it is about 300 horse power, which gives the extraordinary result, that by Mr. F. B. Blanchard's arrangement only 1.7 pounds of coal per horse power per hour were used on that trip.

The inventor obtained a patent in this country July 10, 1855, and two in England and France, and he is about applying for some others here. Any further information can be

obtained by addressing F. B. Blanchard, box 2,454 Post Office, New York.

Timber for Ship-building.

The increasing scarcity of good oak timber for ship-building, says the *London Engineer*, induced M. Arman, the well-known ship-builder at Bordeaux, to make some experiments last year to ascertain the strength of mahogany as compared with French oak and teak. A piece of each kind of wood about

Scientific American.

NEW YORK, SEPTEMBER 4, 1858.

Valedictory.

"All's well that ends well!"

We close the Thirteenth Volume of the SCIENTIFIC AMERICAN with this number. The curtain drops upon a year remarkable for some of its events; and as we glance cursorily over its history, and connect the several years of our varied and interesting experiences, the incidents, the toils, the pleasures, and the pains so mix themselves together and so crowd upon us, that we scarcely know where or how to begin our retrospect.

The progress of science during the last thirteen years has been marked by startling strides, and each great discovery or invention seems more like the dream of some visionary than one of the wonderful and tangible realities which almost daily spring into existence, to mark the mighty triumphs of mind over matter. Could some skillful painter depict upon his glowing canvas the myriad mutations that have occurred in the affairs of our own country since the close of the Revolution which introduced us into the great family of nations, and by an artistic array of scenes, actual and ideal, display the principal agencies that have combined to produce our present national greatness—how deeply would our minds become impressed by the contemplation! In the marvelous results that have been accomplished, it is true that money, and business talent, and experience have each played a conspicuous part; yet it cannot be denied that the *inventive genius* of the American people has been the secret and omnipotent mainspring of that machinery of means which has operated to place them in their present elevated scale. Genius is the master-spirit of all progress—the brilliant planet in comparison with which all other agencies are but the satellites. Wherever the track of true social, moral, and intellectual progress is perceived, there also will be seen the early footprints of the man of genius—the Inventor. It needed the workings of such a mind to project the Steam Engine and render it subservient to the uses of industry and commerce. It required the magic power of inventive genius to produce the Electric Telegraph, by which the very lightnings of heaven are transformed into the fiery-tongued messengers of men. It employed the mental skill and patient toil of sons of genius to devise the Plow, the Printing Press, the Reaper, the Loom, the Sewing Machine, and the thousand of other valuable contrivances which enter into the daily service of man, and contribute to his comforts, luxuries and actual necessities. Thus might we go on, almost interminably, to show that, in all questions of real material progress, in the world of science and art, the inventive genius of our people is the principal pillar of our country's greatness. What stronger proofs of this can be found than those which have been inscribed upon the pages of the SCIENTIFIC AMERICAN during the last thirteen years? How abundant is the testimony which they bear to the achievements of American inventors!

The end is not yet. "Progress" is the watchword. Although the much-searched channels of discovery may seem to have been exhausted of their treasures by the pioneers of progress, there yet remain innumerable fields of facts to be explored by men of genius; difficult problems remain to be solved, and vast results are yet to be elicited.

We shall enter on our Fourteenth Volume with the determination to make it not inferior to any of its predecessors. We shall think, and toil, and labor, day and night, to benefit the mechanics and inventors of our country, and shall carefully and closely chronicle the progress of art and science, at home and abroad. All we ask in return is that cordial fellowship and hearty support may be extended to us, by all our old friends and thousands of new

ones. Soliciting the influence of each of our readers, in extending among their acquaintance a knowledge of the benefits which may be derived from the information contained in the SCIENTIFIC AMERICAN, we assure them that our aim shall ever be to—

"Find tongues in trees, books in the running brook, Sermons in stones, and good in everything!"

Origin of the Atlantic Telegraph.

The Hamilton (C. W.) Times contains a long article headed "The Originator of the Atlantic Telegraph an Englishman," in which it gives a detailed account of the efforts of a young Englishman named F. H. Gisborne, toward bringing the subject of a transatlantic telegraph before the capitalists of Canada and Nova Scotia, and claims that the grand conception of the work now happily completed originated with Mr. G. in 1850 or '51. We beg leave to inform our Canadian neighbor that we have a prior claim to originality in this matter, on behalf of our own countrymen, of at least two years anterior date, and that the distinguished honor of originating and pointing out the feasibility of the great enterprise for whose completion the world is now ringing with praise, belongs exclusively to Gen. Horatio Hubbell, a distinguished member of the Philadelphia bar, who projected and originated the grand idea as early as 1848, and to his associate, J. H. Sherburne, who had the moral courage to join Gen. Hubbell in signing his memorial to Congress, detailing the plan, and asking governmental assistance in carrying it out.

This memorial is the origin of the Atlantic telegraph, and was presented to the Senate of the United States by the Vice President, Hon. G. M. Dallas, and to the House of Representatives by Hon. J. R. Ingersoll, on the 29th of January, 1849. When first published it was treated as a chimera of the wildest kind, and the memorialists, if not mad, as nearly so as possible. When presented in the Senate by Vice President Dallas, the greater part of that body were for throwing it under the table; but one Senator (says Mr. Dallas in a note to Gen. Hubbell, dated March 18, 1854), *Jefferson Davis*, moved that it be referred to the Committee on Commerce, remarking that "the world was not yet prepared for the project, but might be soon." This memorial is recorded on the Senate journal of the day it was presented, and will speak for itself. The idea of establishing a transatlantic telegraph with Gen. Hubbell was not a vague and impulsive one, but was the result of long and patient study, investigation and inquiry of an original and practical mind, which, while it thoroughly comprehended the gigantic character of the undertaking, was yet alive to, and singularly suggestive of the obstacles to be encountered, and the means of overcoming them. In the memorial, the existence of the plateau or table land between Newfoundland and Ireland is first announced to the world as the course where the telegraphic communication would be established between the Old and the New continents. The words of the memorial are explicit on this point, as will be seen by the following extract from it:—

"Your memorialists proceed to say, that from many observations that have been made, there is incontestible evidence of the existence of a submarine table land, extending from the Banks of Newfoundland across the Atlantic Ocean to the mouth of the British Channel. This is proved by the altered color of the sea water, which has a different appearance in unfathomable places from what it has in shallow spots. This, combined with the volcanic construction of Iceland and the Azores, and the situation of that portion of the ocean that lies between both these volcanic groups, has led to the conclusion that there has been a lifting up of the bottom of the sea, through the agency of a Plutonic power, and that the bottom thus elevated appears to be cut through in many places by deep water channels. The appearance of medusæ, polypi, and other marine creatures seen upon the edge of the discolored water strengthens this opinion."

They then proceed to ask that they be fur-

nished with a vessel, in order to make the necessary surveys and soundings, and it was, no doubt, in accordance with this suggestion that Lieut. Berryman was dispatched, and did make his soundings over this part of the ocean in 1853. Lieut. Maury did not make a personal survey himself, but made a report upon the soundings of Lieut. Berryman, under date of 22d of February, 1854—five years after the Hubbell and Sherburne memorial had been presented to Congress and promulgated to the world.

From the foregoing indisputed documentary evidence now on file at Washington, it is plain that the scheme for a transatlantic telegraph had its origin in America, and that the mode, means, and location to carry the telegraph wire or cable across the Atlantic ocean were originated by Gen. Hubbell; that to him and to his deceased associate Mr. Sherburne, who signed the memorial, is due the exclusive honor of first pointing out the existence of the plateau or table land between Newfoundland and Ireland, in connection with the telegraph cable now successfully laid upon it; and finally that these gentlemen were the first to publish and promulgate the feasibility of such an enterprise, and thus enlist in its behalf the attention, capital and skill of the individuals and governments, through whose agency the inceptive idea of the great mind in which it originated has been successfully carried out in accordance with the original suggestions contained in the Hubbell and Sherburne memorial.

The Gutta Percha Life-Boat.

The great utility of a life-boat can be appreciated by very few persons who have not been upon the ocean, and seen the waters lashed with fury, beating against the sides of a gallant ship. It is the last resource; the ship has been knocked to pieces on some rock or shore, or has been put in a sinking condition by the violence of the storm, and the passengers and crew forgetting their treasure and the cargo, think but of saving their lives. The life-boat is manned, the perishing people cling to her sides, and down goes the ship, leaving but that frail little boat between them and eternity. How important is it, then—not in a commercial sense, merely, but in the higher and grander sense of pure humanity—that this life-boat should be constructed in the best manner, and of the best materials—that it should be able to endure knocking about on rocks—that it should not leak, and if capsized, should be able to right itself immediately.

To produce a perfect one, many philanthropic men have spent time, money and genius; and in 1850 the Duke of Northumberland offered a reward of one hundred guineas for the best life-boat. Three hundred persons answered the call, and Mr. Beeching, of Yarmouth, England, obtained the prize, having produced what was then the very best. Since that time many inventors have tried to produce a better, but all their efforts have been directed in the old and well-trodden paths of improving the arrangement of air chambers, &c.; and it was not until 1855 that a new material was proposed; this was gutta percha, which we think will do much for the saving of our fellow men from a watery grave. On the 17th we had an opportunity of witnessing a practical test of its qualities, and of its adaptability to this purpose, the results of which were satisfactory in the extreme.

The life-boat with which the experiments were made was 16 feet long, about 5 feet beam, and 3½ feet deep; she had an air chamber at each end, and was fitted inside with wooden seats, thwart, &c. When in the water she will sustain 100 persons, and from what we saw, seems almost incapable of injury. There are no joints or seams in one of these boats, as they are cast or molded in a male and female mold by hydraulic pressure, from one piece of gutta percha, which is therefore compact and hard. The spot chosen for the trial was the beach at Long Branch, N. J., opposite the National Hotel, and as there was a southwest wind, the "rollers" or

surf, was pretty high. The surf-boat men took her and tried hard to capsize her, but could not succeed, and then filling her with water, sent her adrift among the rollers, which brought her safe and uninjured to shore. She was next drawn high and dry, and pummeled by the surf men with an oar, but they were not able to make any impression on her sides. Altogether, the experiments clearly proved that gutta percha was an excellent material for a life-boat, and that it possesses many advantages not found in the substances usually employed. It is light, cheap, and easy of construction and repair, and when worn out or badly damaged, the material is always a marketable commodity. The patentee, Mr. E. B. Larchar, of this city, received many well-deserved compliments from the persons who witnessed the trial, and we understand that a company is formed for the manufacture and sale of these boats.

Mineral Oil.

The *Mining Chronicle* mentions an improvement recently patented in England by S. Lees, of Salford, by which a considerable saving of time and expense is effected, as three tons or more of raw material may be operated on in one still. The invention consists in distilling or abstracting the oil contained in the coal, cannel, schist, or other mineral substances, by combining such substances with asphaltum or pitch (the residuum formed in the manufacture of gas for illumination), and other suitable substances, and by the application of heat, which dissolves the asphaltum, and causes the mineral bituminous substances to give off their oil in the form of vapor. He breaks the bituminous substances and asphaltum into pieces of any convenient size, and puts the whole into a common still, which is then closed and heated in the usual manner. The vapor is condensed in an ordinary worm, and the residuum may be used as fuel. Another important feature in the invention is, that the still may be heated as rapidly and to as great a degree as possible without injury to the oil produced, or waste from the production of gas; moreover, the oil produced by the single distillation is almost clear, the carboniferous and earthy particles of the mineral bituminous substances being retained in the still by the asphaltum or pitch, whereas in the modes heretofore adopted, the products from coal, cannel, and schists have required a second distillation to separate the oil from the asphaltum or pitch, and to produce oil of a color and specific gravity equal to that produced by Mr. Lees' invention.

Personal.

T. H. Dodge, Esq., Chairman of the Patent Office Board of Appeals, has obtained two months leave of absence. He lately favored us with a call, when en route to his home in New Hampshire.

We understand that all the back appeal cases have been acted upon so that the docket is clean. Appeals are now heard and decided within a brief time after presentation. This is a very gratifying state of things for applicants, and indicates the closest industry on the part of the Board, for at times their bureau has been much crowded.

The Board of Appeals has been in operation now nearly a year, and we believe its workings have given pretty general satisfaction. It has served to harmonize the decisions of the Office, and inspire a confidence and respect for the institution which it did not before enjoy.

At the time of the creation of the Board, we expressed the opinion that it was a movement which the times demanded, and that it would reflect high credit upon the sagacity of the Commissioner of Patents. Nearly a year's practical experience of the workings of the Board fully confirms the impressions originally formed.

During the absence of Mr. Dodge, the appeals will be attended to by the other members of the Board, Messrs. Lawrence and Little, both of whom are able men.

Starch Manufacture.

The great consumption of this article—in which every civilized country indulges, as enabling the community to keep that virtue which is next to godliness—has rendered it necessary, from time to time, to improve its manufacture in many ways. A large factory for the production of starch was some time ago started at the pleasant village of Glen Cove, on Long Island Sound, and after it had been in operation about a year, it was destroyed by fire on the 9th of February last. As it was largely insured, means were quickly provided to erect a new one, and a few weeks ago, the Glen Cove Starch Manufacturing Company, through their energetic secretary, Wm. Duryea, who has been the persevering genius of the whole, invited some eight hundred persons to spend an afternoon in the works, to inaugurate their re-commencement. Every visitor who knew anything of starch manufacture was enabled to see at a glance the many improvements there introduced, not so much in the processes themselves, as in a careful attention to detail, and in every practicable instance the substitution of machinery for manual labor, as, for example, it has been the custom to elevate the starch water from floor to floor and into vats, by hand, but at this factory a great number of Cary's rotary pumps are employed, and they save a great amount of labor. The water is also of the best quality, issuing from a spring, and passing through the natural rocky filter of old mother Earth. The factory is capable of turning out eighteen tons a day, which is nearly two hundred thousand pounds a year more than Great Britain produced in 1835.

Starch is a beautifully white pulverent substance existing in all grains, fruits, seeds and esculent roots, and is a necessary component of animal nutrition. Rice contains 85 per cent; Indian corn, 65; potatoes, 20; and other vegetables various proportions. In Europe much is made from rice, but here the best white corn is used. The corn when delivered at the factory is hoisted from the sloop to the top of the building, and after having been winnowed, it is soaked in vats to prepare it for the mills, to which it is carried through shoots by a stream of water, and the mixed meal and water passes from the mills into the room where the two principal constituents of the corn, starch and gluten are separated. This is done by kneading and straining the corn, and the starch flows away in a white milky liquid, the gluten remaining behind. The starch is then allowed to settle, and when tolerably solid is placed on shelves of loose brick which absorb the moisture, some of which, however, evaporates. Kiln-drying finishes the process, when it is ready to be packed in papers for sale.

The Glen Cove Starch Company, determined to lose nothing, sell the gluten for food for horses, cattle and pigs, to which purpose it is excellently adapted, being far better, and we should think as cheap as swill. They also make an article of food, in the form of a cake, which we tasted, and have no hesitation in pronouncing it superb; it is called Maizena, and the following recipe will inform our lady readers how it is to be used:—

Maizena.....Half Pound.
Sugar.....Two Cups.
Butter.....Half Cup.
Eggs.....Three.
Cream Tartar.....Teaspoonful.
Soda.....Teaspoonful.

Dissolved in one-third of a tea cup of milk. Mix thoroughly, place in patty-pans, and bake immediately in a quick oven, from ten to fifteen minutes. The cake improves by age, if kept in a dry place.

The fire extinguishing apparatus of the factory and the machinery are perfect, and the excellent condition in which both are kept, called forth the warmest praise from the visitors, who, after partaking of some substantial hospitalities in the way of a collation, returned highly pleased with what they had seen, and all agreeing that the Glen Cove Starch Manufacturing Company was deserving of an eminent success.

Atlantic Telegraph Shares and Vested Rights.

Immediately upon the receipt of the intelligence at London of the successful laying of the Atlantic telegraph cable, the shares of \$5,000 each, which were freely offered the day before for \$1,700, advanced at once to \$4,600. The original paid-up capital of the Company was \$1,600,000, and this has been increased to \$2,280,000. Of this sum \$375,000 in shares is to be handed over to the company in payment for the exclusive privilege assigned to it upon completion of the undertaking. The colonial concessions of the company give them an exclusive right for fifty years as regard the Newfoundland coast and the shores of Labrador and Prince Edward Island, and twenty-five years as regards Breton Island. They have also a similar privilege for twenty-five years from the State of Maine.

From the respective governments of Great Britain and the United States the terms obtained are a payment of \$60,000 per annum from each for the transmission of their messages for fifty years, until the dividends amount to six per cent on the original capital, after which each government is to pay \$50,000 a year, such payment to be dependent on the efficient working of the line.

The First News Message through the Cable.

The following was received in New York on the morning of the 26th ult., and being the first news message transmitted through the Atlantic Telegraph Cable, deserves to be placed on record:—

VALENTIA, August 25, 1858.

Later and highly important intelligence has been received from China.

Later Indian news is to hand, the dates from Bombay being to the 19th of July. The accounts represent that the mutiny was being rapidly quelled.

To-day's London papers have a long and interesting report by Mr. Bright, the Atlantic Telegraph Company's Engineer.

A treaty of peace had been concluded with China, by which England and France obtain all their demands, including the establishment of embassies at Peking and indemnification for the expenses of the war.

The royal mail steamship *Asia*, with the mails for Halifax and Boston, is to be despatched from Liverpool on Saturday next.

The screw steamship *North American*, with the Canadian mails, was to leave Liverpool to-day, for Quebec and Montreal.

The U. S. mail steamship *Fulton*, for New York, was to be despatched from Southampton to-day. We have it on reliable authority that the above message was only two hours in coming across the Atlantic Ocean.

New Photograph Invention.

Messrs. Seely & Garbanati, photographic chemists, of this city, have recently perfected an apparatus by which life-size photographs may be produced with all the ease and perfection of small pictures. We have examined the mammoth portraits produced by it, and found them quite free from the distortion which has generally characterized large photographs; in fact, the life-size likeness is an exact counterpart in figure and detail of the person, and needs as little of the artist's retouching as the ambrotype or daguerreotype. The cost of materials used in the preparation of the paper is trifling, while the apparatus complete is manufactured for about \$20.

The instruments hitherto employed for making portraits of a larger size than 6 by 8 inches are sold at prices ranging from \$200 to \$1,000, and the chemical preparations required for a commencement involve a large outlay. The old methods, moreover, are uncertain, tedious, and the best results unsatisfactory, till the pencil of the artist has softened down the defects.

The inventors are preparing for exhibition a full length colossal photograph, fifteen feet in height, of one of our most distinguished citizens.

This new instrument, called the "Mega-

scopic Camera," is similar in principle to the solar microscope. A small picture is first produced in the usual way from the object; an image of this small picture is thrown magnified from the new camera on to a sensitive surface (paper or canvas), on which it is impressed in a few seconds. Any small picture (portrait or view) may thus be accurately enlarged to any desired extent.

Many of our most enterprising photographers have adopted the instrument, and seem to think that it will come into general use for all pictures over 6 by 8.

Steam as applied to Navigation and Land Travelling.

Several nations claim the credit of having first conceived the idea of employing steam for moving carriages on land as well as ships at sea, but the author of the lately published life of George Stephenson seems to think that the weight of evidence is on the side of a Frenchman named Solomon de Caus, who was shut up for his supposed madness in the Bicêtre at Paris. Marion de Lorme, in a letter to the Marquis de Cinq-Mars, dated Paris, February, 1641, thus describes a visit paid to this celebrated madhouse in company with the English Marquis of Worcester:—"We were crossing the court, and I, more dead than alive with fright, kept close to my companion's side, when a frightful face appeared behind some immense bars, and a hoarse voice exclaimed, 'I am not mad! I am not mad! I have made a discovery that would enrich the country that adopted it!' 'What has he discovered?' asked our guide. 'Oh!' answered the keeper, shrugging his shoulders, 'something trifling enough; you would never guess it; it is the use of the steam of boiling water!' I began to laugh. 'This man,' continued the keeper, 'is Solomon de Caus; he came from Normandy four years ago, to present to the King a statement of the wonderful effects that might be produced from his invention. To listen to him, you would imagine that with steam you could navigate ships, move carriages; in fact, there is no end to the miracles which he insists upon it, could be performed. The Cardinal sent the madman away without listening to him. Solomon de Caus, far from being discouraged, followed the Cardinal wherever he went, with the most determined perseverance, who, tired of finding him forever in his path, and annoyed at his folly, shut him up in the Bicêtre. He has even written a book about it, which I have here.'"

It appears that the Marquis of Worcester was greatly struck by the appearance of De Caus, and afterwards studied his book, portions of which he embodied in his "Century of Inventions."

Danger of Hoop Skirts.

We see it stated that the medical attendant of the Princess of Gothland asserts that hoop skirts are the cause of accouchments lately becoming so dangerous and difficult. He adds that this fashion is the source of a vast number of chills, the consequences of which are, in many cases, mortal. If this gentleman is to be credited, the prevailing method ladies adopt to spread themselves has as many deaths to answer for in Sweden as cholera. We have always thought that hooped skirts of reasonable bounds were not only an adornment to the persons of the fair wearers, but on account of their ventilating character, actually beneficial to health. Ladies generally evidently think so, and as they are the actual sovereigns of creation, and will wear what suits them, we doubt whether this statement will have any effect. One thing is certain, and none know it better than themselves, that no matter how fantastically or ridiculously they may dress, they will be admired the world over.

2,500 ounces of gold has been shipped from Nelson, New Zealand, to Melbourne, Australia, being the first shipment from the newly discovered gold fields of the former island.

Washington's Tomb and Homestead.

This place, which is to every American as hallowed ground, is about to be bought by the ladies of America, provided they get the money, to effect which object many of our most philanthropic "fair" have formed themselves into a society called the "Mount Vernon Ladies' Association." Their rooms are at the Cooper Institute, in this city; and any of our readers in their patriotic moments may send their donations to Miss M. M. Hamilton, who has undertaken the honorable post of Vicegerent of this State.

New Disinfecting Cement.

There is a considerable difference between a deodorizer and a disinfectant. The former either merely removes or disguises a foul odor; the latter changes the character of the matter which creates the effluvia, and prevents it from sending forth disease. Fresh slacked lime and charcoal dust are very good deodorizers, but their disinfecting powers are not equal to some of the salts of manganese, which, when they combine with pestilential fluids in sinks and drains, give out at the same time a considerable quantity of pure oxygen to refresh the atmosphere. The manganate of soda, or potash, has recently been tried in London with much success in deodorizing and disinfecting the water of the river Thames, and its use in our cities during dry weather may be of great benefit. It is applied by dissolving it in warm water, and pouring it into the sink or drain to be disinfected.

A Thrifty Machine Shop.

The Newark (Ohio) Machine Works commenced operations some four or five years ago, under the care of our esteemed friend, Mr. Joseph E. Holmes, and since that time the company has had a tide of continued prosperity. The amount of work turned out each year reaches about \$150,000. The men employed in the works, now numbering about one hundred, have distributed within the past three years, for purposes of pure benevolence, \$1,336. Forty-five of them are members of a reading room. They also take 222 papers, magazines, &c. In this list we recognize 90 copies of the SCIENTIFIC AMERICAN. These facts are interesting, and reflect much credit upon the mechanics as well as upon the managers of the company.

Our friend, H. S. Babbitt, is still connected with the above works, and will continue to forward all subscriptions to the SCIENTIFIC AMERICAN entrusted to his care.

A Rule worth Observing.

In accordance with an invariable rule adopted at the beginning of this journal, all subscriptions are promptly discontinued when the time for which they are paid expires. As a general thing, this system has the approbation of all our readers; but occasionally, we receive complaints, stating that we ought not to have enforced this rule in certain cases. Now it must be borne in mind that we cannot justly make any distinctions between one subscriber and another; besides, we believe it would be impossible for us to manage our journal successfully under any other system than *advance payment*.

The local circulation of the SCIENTIFIC AMERICAN is comparatively small; its subscribers and patrons are scattered throughout all the States and territories of our country, and many copies are circulated in Europe; therefore it would be impracticable and ruinous for us to undertake to employ agents to travel and collect subscriptions. We hope all our friends will promptly remit, in order to renew their own subscriptions, and that they will get as many new subscribers as possible. We urgently appeal to them to come forward and aid in increasing our circulation, and thus not only confer a favor upon us which we shall highly appreciate, but spread abroad the useful information with which the columns of the SCIENTIFIC AMERICAN are always stored.

Clubs of twenty or more yearly subscriptions are supplied with the SCIENTIFIC AMERICAN at \$1 40 each.

Correspondents

S. Cochran, of Petersburg, Va., wishes to procure a machine for dressing grain cradle fingers to their proper shape after being bent and sawed out of the sheet. Also a lathe that will turn the snaths a gradual taper five feet long.

J. W. G., of Pa.—Your method of instantly converting water into steam by bringing it into contact with heated surfaces is not new, nor has it been found beneficial in practice.

J. E. McC., of Ohio.—You say you do not think that any machine can be made to fly by mechanical contrivance alone; and to overcome this difficulty you propose to suspend the aerial car in the air by means of hydrogen gas, and then propel it by machinery. You do not seem to be aware of the fact that this notion has extensively prevailed for ten years past. Porter, Pennington, and others, are ahead of your project.

F. G., of L. I.—Fine sand is first used in grinding glass, and then very fine oxyd of iron for polishing.

O. M., Washington, D. C.—Call at our office corner of F and Seventh st., opposite the Patent Office. Our folks will take pleasure in posting you up in regard to the novelties of the Capitol.

R. W., of Iowa.—Zinc white is much employed by whitewashers; they mix it with the lime and it makes a very durable wash. The lime used as a body for fresco painting is thus prepared by the artists of Munich: a pit is filled with clean burnt limestone, which is slaked, and then stirred continually till it is reduced to an impalpable consistence. The surface having settled to a level, clean river sand is spread over it to a depth of a foot or more, so as to exclude the air, and lastly, the whole is covered with earth. Thus it remains for two or three years before it is used either for painting or coating walls. Fine gilt stripes are put on glass by first sizing the glass and then burnishing gold leaf on to it, and cutting away the excess of gold leaf.

F. M., of Pa.—If you merely make a model of an invention from a drawing furnished by another, you can certainly lay no claim to the invention. The inventor must apply for the patent, and it can be assigned to you.

C. P. A., of Va.—A composition of four pounds rosin, one pint linseed oil, and one ounce red lead, applied hot with a brush, is an excellent article for stopping leaks in roofs, caeks, &c.

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J. M. M., of Ind.; R. H. E., of Ill.; W. H. T., of Mass.; E. C., of Mass.; W. S. T., of Iowa; S. Y., of Mass.; F. K., of Mass.; W. G. S., of Ill.; J. P. E., of Va.; J. D., of Conn.; G. H. S., of Iowa; J. B., of Texas; L. S. C., of N. Y.; H. & C., of Me.; R. E., of Mass.

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INDEX.

Illustrations.

A
Apple Parer, (Whittemore,) 260.
Axe Box, (Biller,) 241.
Axe Bearing, R. R., (Allen,) 316.

B
Bag Fastener, (Maxson,) 78.
Bale Band Fastening, (Ingersoll,) 332.
Barrel Machine, (Matterson,) 169.
Barometer for Farmers, 52.
Bee Stand, 156.
Bit Holder, (Hill & Adams,) 172.
Blind, Window, (Cochran,) 132.
Bolt, Lever Locking for Doors, 109.
Bolling Reel, (Woodville,) 334.
Boot Crimp, (Willmot,) 73.
Boring and Mortising Machine, (Kittling), 97.
Boring Machine, (Bosenbury,) 220.
Bottle Washer, (DeGraw,) 56.
Bottle Fancier, (C. Cook,) 332.
Bottles, Screw Neck, 184, 211.
Box for Carriage Hubs, (Garratt,) 76.
Brake, Car, (Brauer,) 244.
Brake, Car, (Solomon,) 312.
Bridge, (Barden,) 376.
Brick Machines, (Jayne,) 81.
Brick Machines, (Carnell,) 257.
Brick Machines, (Wagner,) 276.
Buggy, (Lucas,) 332.
Burners, Gas, (Gates,) 64.

C
Cane, Omnibus, (Francis,) 244.
Carpet Fastening, (Schroeder,) 32.
Carpet Fastening, (Thayer,) 376.
Carpet Stretcher, (Tyler,) 76.
Carriage Tops, (Jennings,) 28.
Carriage, Timber, (Gilbert,) 72.
Cane Top for (Potts,) 44.
Car Seat and Couch, (Meyer,) 377.
Car Wheel, (Pugh,) 404.
Cartridge, (Morton,) 382.
Casks, Cleaning 92.
Chain Machine, (Seppy,) 17.
Chair, R. R. 108.
Clothes Dryer, (Merrill,) 292.
Club Policeman's, (McLarty,) 100.
Coin Balance, (Harper,) 206.
Collecting the Excrements of Towns, 144.
Condensers for Steam Engines, (Miller,) 153.
Cooler for Liquids, (Mossenger & Retahn,) 92.
Cooler for Brewers, (Wood,) 289.
Corn Planter, (Bocklen & Bossert,) 216.
Corn Planter, (Messer,) 236.
Cotton Gin, (Gillet,) 248.
Cotton Picker, 250.
Coupling, Car, (Prosser,) 64.
Coupling, Car, (Eague,) 187.
Coupling, Car, (Leane,) 352.
Coupling, Car, (Gleason,) 369.
Coupling, Pipe, (Hudgin,) 312.
Coupling, Belt, (Smith,) 344.
Coupling, Percol, (Lord,) 369.
Crampon for Horses, 176.
Cushion for Billiard Tables, (Phelan,) 176.
Cut-off for Steam Engines, (Crosby,) 187.
Cut-off and Governor Valve, (Mackintosh & Wadsworth,) 401.
Cutting Apparatus for Reapers, (Hussey,) 333, 352.

D
Damper for Furnace Flues, (Barrows,) 508.
Drafting Instruments for Tailors, 228.
Dynamometer, (Leonard,) 41.
Dynamometer, (Gibbs,) 364.

E
Egg Beater, (Heich,) 209.
Engine, Hot Air, (Ericsson,) 208.
Engine, Rotary 273.
Engine, Steam Fire, (Sibley, Mynderse & Co.) 297.
Engine, Rotary, (Root,) 313.
Engine and Pump, (Sprenkel & Bassford,) 345.

F
Feed for Paint Mills, (Dolson,) 89.
Felling Machine for Sawing, (Vaughan,) 48.
Fence, (Stannard,) 168.
Fence, (Hoge,) 294.
Filter for Cisterns, 104.
Fire Protector, (O'Brien,) 80.
Flour Bolt, (Geib,) 217.
Fluids, Heating 112.
Fruit Gatherer, (Daly,) 329.
Fruit Gatherer, (Goodwin,) 386.
Furnace, Feeding 216.
Furnace, Bagasse, (Skelly,) 308.
Furnace, Hot Air, (Ingersoll,) 300.

G
Gage, Leakage Alarm, (Massey,) 32.
Gage, (Bryant,) 24.
Gage, Magnetic Steam, (Lowe & Barnum,) 309.
Gas Works, (Aubin,) 212.
Gas Apparatus, (Hook,) 396.
Gate, Automatic, (Smart,) 180.
Gate, Automatic, (Howard,) 232.
Gold Washer and Ore Separator, (Barnard,) 348.
Governor for Horse Powers, (Pusey,) 363.
Grater, Nutmeg, (Ames,) 84.
Grain Cleaner, (Gates,) 28.
Grain Cleaner, (Vandergrift,) 360.

H
Harness Tree, (Dempsey,) 204.
Harness Tree, (Kahnhold & Sturges,) 368.

Harvester, (Howarth,) 68.
Harvester, (Willard & Ross,) 156.
Harvester, (Patterson,) 164.
Harvester, Corn, (Adair,) 329.
Harvester, Corn and Cane, (Bouwell,) 404.
Heater for Boilers, (Hoadley,) 297.
Heater, Hot Water, (Hedenburg,) 316.
Heminy Machine, (Mayhew,) 12.
Holder for Sad Irons, (Londinsky,) 272.
Hot Water Apparatus, (Brown,) 231.
Hub Turning Machine, (Eames,) 292.
Hub Mortising Machine, (Eames,) 292.
Huller, Cotton Seed, (Fee,) 32.
Husking Machine, (Bachman,) 20.
Husking Machine, (Hurst,) 241.
Husking Machine, (Smith,) 393.
Husker and Feed Cutter, (Bryson,) 337.
Husking and Shelling Glove, (Cohen,) 176.
Hydrant, (Race & Matthews,) 240.
Hydrant, (Blinny,) 356.

I
Inkstand, (Robjohn,) 160.

J
Journal Box, (Dederick,) 332.

L
Lamp, Submarine 112.
Lantern, (Richards,) 192.
Lathe, Centering, (Henderson & Steel), 409.
Leather to cut to fit a cone drum, 286.
Lock, Bank, (Isam,) 25.
Lock, Bank, (Braden,) 372.
Locomotive, European 136.
Locomotive, Co. 1 Burner, (Hartnett,) 324.
Loss of the "Ava," 328.
Lubricator, 84.
Lubricator, (Custer,) 184.

M
Match Safe, (Creamer,) 224.
Metal Bars, securing, (McKibben,) 354.
Meter, Water, (Cochran,) 1.
Mill, Corn, (Stout,) 9.
Mill, Sugar, (Dakes,) 321.
Millstone Dress, (Natche,) 328.
Mortising and Boring Machine, (Jay,) 233.
Motion, Transmitting, (Kaeffer,) 40.
Mowing Machine, (Neshwitz,) 288.

N
Nail Machine Feeder, (Sherwood,) 249.

O
Ore Washer, (Pauli,) 185.

P
Paddle Wheel, (Fisher,) 36.
Pea Sheller, (Stevenson,) 1 fig. 272.
Perpetual Motion, 62.
Pin, Diaper, (Heilman,) 56.
Piping, Lead, Manufacture of 76.
Pipe Joint, (Kahnweiler,) 404.
Pitchers, Ice, (Smith,) 362.
Planing Machines, (Whitney,) 65.
Planing Machines, (Darby & Young,) 105.
Planing and Slotting Machines, (Barton,) 220.
Potato Rot, 408.
Planers, Rotary, (Baker,) 208.
Planers, Cutter stock for, (Mason,) 265.
Plow, Drain, (Rutt,) 60.
Plow, Snow, (Lumy,) 108.
Plow, (Sharp,) 104.
Plow, (Dennis,) 256.
Plow, (Van Loan,) 256.
Plow, (Sanford,) 234.
Plumb and Level Indicators, (Rowe,) 248.

P
Potato Digger, (Hardenburgh,) 340.
Press, Cotton, (Witting,) 193.
Press, Cotton, (Boys,) 201.
Press, Cotton, (Disbrow,) 232.
Press, Cotton, (Pensiston,) 244.
Press, Cotton, (Bocago,) 300.
Press, Job Printing, (Babcock,) 385.
Printing Machine, (Francis,) 324.
Propulsion, New Method of, (Wetmore,) 14.
Pump, (Adams,) 49.
Pump, (Ramsden,) 60.
Pump, (Sutton,) 177.
Pump, (Shelden,) 252.
Pump, (Underwood,) 273.
Pump, (Race & Matthews,) 276.
Pump, (Harrison,) 364.
Pump, (Barnum,) 372.

Q
Quilting Frame, (Brown,) 388.

R
Railway, Elastic Iron, (Beers,) 196.
Rake, Head, (Hotchkiss,) 84.
Reaper and Mower, (Ray,) 4.
Ring Bolt, (Devins,) 348.
Rule, Carpenters', (Stephens,) 304.

S
Salinometer, 184.
Sash Supporter, (Baker,) 76.
Sausage Machine, (Snair,) 390.
Saws, Setting and Sharpening, (Hoe & Co.) 16.
Saws, Tenon, (Harrison,) 33.
Saws, Scroll, (Lawton,) 116.
Saw Mill, Feed for, (Lund,) 52.
Saw Mill, (Ferry,) 260.
Saw Filer, (Andrews,) 100.
Saw Gunner, (Elmer,) 321.
Saw Bench, (Wardwell,) 388.
Sawing Machine, (Wilson,) 4.
Sawing Machine, (Batchelder,) 225.
Sawing Machine, (Bartholomew,) 309.
"Science in Sport," 128, 136, 144.

152, 160, 168, 176, 184, 192, 200, 208, 216, 224, 232, 240, 248.
Scythe, Folding 152.
Seed Planters, (Hould & Flanders,) 44.
Seed Planters, (Willard,) 48.
Seed Roller, (Thompson,) 238.
Sewing Machine, Feed for, (Andrews,) 92.
Shade Fixtures, (Schleir,) 172.
Shafts and Fcile for Carriages, (Mitchell,) 280.
Shafts, Attaching to Vehicles, (Boyce,) 332.
Sheep Shearing Machine, (Jenkins,) 129.
Shingle Machine, (Smith,) 113.
Ships, Building, (Reeves,) 236.
Signal Lights, (Potts,) 100.
Signals, R. R. 120.
Smut Machine, (Woodward,) 144.
Smut Machine, (Donchou,) 380.
Smutter and Grain Separator, (Turner,) 145.
Smutter and Grain Separator, (Kelly & Frost,) 356.
Socket for Bolts, (Callender,) 52.
Spikes, Clinching, (Bates,) 46.
Spoke Machine, (Guard,) 252.
Spring, Car, (Douglass,) 328.
Stalk Cutter and Crusher, (Clinger & Creamer,) 337.
Stalk Cutter, (Tilton,) 361.
Slave Machine, (McNish & Butler,) 57.
Stave and Barrel Machine, (Swan,) 121.
Stave Cutter, (Crossett,) 392.
Steam Boiler, (Blanchard,) 412.
Serrup, Safety, (Neil,) 68.
Stone Breaker, (Blake,) 409.
Stove, Carriage, (Loffert,) 20.
Stove, Summer, (Westlake,) 161.
Stove, Gas, (Milhan,) 180.
Stubble Cutter, (Augsburger,) 121.
Submarine Works, 132.
Suction Blower, (Pollock,) 116.
Sugar Cane Stripper, (Dickey,) 329.
Sun Dial, 294.
Square, Marking and Winding, (Hoke,) 406.

T
Table, Extension, (Gross,) 148.
Table, Extension, (Clark,) 172.
Table, Ironing, (Vanderburgh,) 284.
Tanning Apparatus, (Shaw & Clark,) 204.
Telegraph Cable, (Illustrations,) 213, 390, 398, 400.
Tires, Upsetting, (Hayes & Gibbs,) 24.
Tires, Tightening, (Keggs,) 208.
Tongs, (Hart,) 169.
Tongs, Pipe, (Gillmore,) 313.
Tool, Wood Cutting 128.
Tool, Combination, (Lamson,) 208.
Trees, Felling, (Ludwig,) 6.
Tunnel between N. Y. and Brooklyn, (Boeker,) 336.

V
Valve, Throttle, (Simmons,) 40.
Valve, Throttle, (La France,) 324.
Valve, Slide, (Scott,) 304.
Valve, Trap, (Hoard & Wiggings,) 361.
Valves, Operating, (Jamieson,) 353.
Vise Anvil, (Mason & Davis,) 340.

W
Wagon, Dumping, (Cope,) 289.
Wagon, Pleasure, (Saladee,) 296.
Wheels, Turbine, (Bastion,) 56.
Wheels, Water, (Daniels,) 196.
Wheels, Water, (Custer,) 380.
Windmill, (Witting,) 187.
Winnow, (Doyle,) 344.
Wrench, Monkey, (Whitell,) 12.

Miscellany.

A
A Peep into a Welsh Coal Mine 35.
Acid, Sulphuric 326.
Aerial Apparatus 3.
Air Baths 11, 43.
Alloys for Metals, &c. 246.
Alloys of Metals 311.
Alloys for Sheathing Ships 264.
Aluminum 265.
Appoplexy 301.
Aquaum 19.
Arsenic in Wall Paper 320.

B
Bank Note Printing 378.
Battery, Steam Floating 113.
Barometer for Farmers 11, 35, 52.
Barometer, Self-Indicating 278.
Barrel Manufacture 59.
Bees, New Food for 245.
Bleaching Straw Hats 94.
Bleaching Fibrous Materials 83.
Boilers, Useful Information about 20.
Boilers, Removing Scale from 187.
Boilers, Steam and Furnace 334, 342, 367, 374.
Brandy, Origin of 382.
Brass, and Alloys, to make 381.
Brass, by Machinery, (Berdan,) 149.
Bread, Economy in 262.
Bread, Hot, 313.
Bread, Saleratus and Cream Tartar in 326.
Brick, Fire 40.
Bricks, Railway 301.
Bricks, Drying by Heat 131.
Burns, Cure for 344.
Butter Making and Butter 134.

C
Calceos, Cleansing 257.
Canals and Railroads 299, 344.
Canal, Pacific 307, 323.
Carbon 2.
Cements and Mortars 253.
Cements, Roofing 286, 294.
Cements, Hydraulic 403.
Chopped Hands, Cure for 150.
Chemical Patents, index to 43, 86, 107.
Chicory, Cultivation of 262.

Cisterns 289, 318.
Club, Policemen's, (McLarty) Com'r Decision on 101, 115.
Coal 26.
Coal in Canada 333.
Coal Oil, Manuf'r of 254.
Cochineal, Cultivation of 237.
Coke, Manuf'r of 361.
Coloring Matter Extracting 11.
"Cott's" Application for Extension 245, 261, 255.
Compasses, Ships 61.
Consumption, Remedy for 321.
Cool, How to Keep 343.
Copper, Extracting from the Ore 248.
Copper Ores, Treatment of 360.
Croscote, A Cure for Dysentery 96.

D
Dams, Construction of 126, 139.
Dead, Burning the 326, 344.
Decisions on Patent Cases—
"Carding Machine" 45.
"Iron Beam" 77.
"Telegraph" 245.
"Circular Saw Mills" 214.
"Reaping Machine" 268, 273.
"Sewing Machine" 285, 308.
"Hat Body Machine" 296.
"India Rubber" 317.
Diving Apparatus 57.
Dialing 323.
Dyes from Coal Tar Products 306.
Dyeing Wools and Woolens 11.

E
Electricity 29, 318.
Engine, The "Cloud" 376.
Equivalent, What Constitutes an 126.
Eye, Instrument for Examining 401.

F
Fair, American Institute 21, 29, 37, 46, 54, 62, 70, 86.
Fairs, State 397.
Fans for Ventilating Mines 267.
Fire Arms, Experiments with 6, 14.
Fire Arms, Official Report on 49, 401.
Fire Arms, Trial of 113, 390, 406.
Fish, Culture of 305.
Fluid Pressure 110.
Fluids, Burning 133, 142, 189.
Fluids, Naphtha 312.
Food consumed in the Life Time of Man 311.
Fuel, Granular, (Daniels,) 245.
Fuse, Safety 149.

G
Gas, Coal 17.
Gas Burners, Soapstone 124.
Gas, Lighting 190, 206.
Gas, To Save 313.
Gas Light on Cars and Boats 405.
Gold Extracting from Dress 405.
Glass, To Gild 56.
Glue, Liquid 150.
Glucose and Sirup 211.
Gold Washes 219.
Gold Lace, How it is Made 368.
Green, How to Dye 360.
Gunpowder 69.
Gun Cotton and Collodion 109.
Gun 312, 329.
Gutta Percha, Treatment of 12.
Gutta Percha, its uses 37.
Gutta Percha, Purifying 348.
Gyroscopic Paradox 21.

H
Hair, Specific 118, 158.
Hair for Stuffing Beds, &c. 340.
Hands, How to Whiten 320.
Hypsometer, The 405.
Horses, Taming 268, 283, 293.
Horses, Taming "Rarey's" Method 253.
Horses, Transferring Blood into 254.
Horses, Protecting from Flies 380.
Horsehoeing, 342, 349, 365.
Hosiery, imp't. in 36.
Hydrophobia, Signs 401.

I
Ice, Manuf'r of 75.
Incrustation in St. Boilers, 226, 238.
Ink for Marking Linen, 387.
Ink, Copying 123.
Inventions, Can an employer claim his workman's 331.
Inventors, Chance for 325.
Iron, Inquiry about 14.
Iron, Galvanized 20.
Iron, Tinning 152.
Iron Tubes, Lapwelded 197.
Ivory, How to Soften 54.

L
Laboratory, The 235, 246, 254, 262.
Lace, Brussels 320.
Lamp, Inventor of the "Safety" 8.
Lamp, Electric 300.
Leather, Patent 88.
Leather, Fastening to Metal 88.
Leather, Preparing Kid 305.
Life Boat, Gutta Percha 413.
Life Saving Apparatus 56.
Lighting and Milk 315.
Lime for Potatoes 156.
Locomotive, Coal Burning 253.
Locomotive, Horse Power of 287.

M
Magnetic Attraction, (Morris,) 222, 226.
Machine, Artificial 3, 11.
Match Machine 224.
Metal, (Howell's) 117.
Meridian, How to obtain the True 20.
Microscopes 321.
Milk Sickness, Cure for 249.
Minnie Rifle Ball 81.
Mines, Ventilating 235.
Molding, explosions in 241.
Moonology, 238.
Mosquito Tobacco 94.
Motors, 61.

N
Nail Machine 276.
Neillo-Enamelling 38.

O
Oil of Vitriol, How to Make 13.
Oil, Drying 116, 153.

P
Paints, Experiment with 187.
Paint Vehicles 310.
Paint Deposit 384.
Pails, Painted 241.
Palladium 62.
Paper for Bank Notes 17.
Paper, Drying Sized 3.
Paper, Waterproof 112.
Patent Offices, British and American 22.
Patent Extensions 3.
Patent Extensions, Why we Oppose 277.
Patent Extensions, (India Rubber) 325.
Patent Extensions, (Goodyear) Com'r Holt's Decision 350, 358.
Patents, Com'r of (Mason) with Portrait 8.
Patents, Com'r of (Holt) 13.
Patent Case (Wood Mouldings) 83.
Patent Laws, Legislation upon 229.
Patent Laws, Reform of 301.
Patents in use in 1856, 163.
Patent Bill, (Taylor & Chaffee) 198.
Patent Bill, Amendment 222.
Patent Bill, Fate of 341.
Patent Office Structure 341, 349.
Pat. nt Office, Agricultural Division of 325.

Patents, Applying for 339.
Patent Agents and Lawyers, 357.
Patented Improvements 235, 243, 254, 259, 267, 283, 291, 311, 315, 323, 331, 339, 347, 355, 363, 366, 371, 382, 387.
Peat for Fuel, 161.
Photographs for Wood Engravings, 117.
Photographs, Superiority of American, 342.
Photography, Wonders of 324.
Photography, applied to Ornamenting Silk Stuffs 301.
Pigments, French 344.
Pile, Voltaic 236.
Plated Goods, 57.
Plating, New Method 9.
Plum Trees, Salt for 197.
Poisons, and the Antidotes for 118.
Porcelain for Periodicals 41.
Potato Rot 382.
Potato Rot, Preventive 293.
Potatoes, How to Raise 243.
Potatoes, How to Improve Soggy 253.
Potatoes, Uses of 323.
Press, Printing, (Beech) 333.
Printers' Rollers 348.
Printing from Veneers 2.
Propeller, side screw 248.
Pump and Propeller combined 99.

Q
Quicksilver, Fulminating 281.

R
Razor Paper 368.
Reapers and Mowers, Operating Cutlery of 3.
Register for Gas Meters 265.
Report of the Com'r of Patents 170.
Rollers for Callendering 44.
Rooms, Cooling 257.
Rope, Wire, 89.

S
Saddles, Clearing 35.
Safe, Specie 68.
Said Bars and Dredging 51.
Sapphires, Producing 337.
Scents, Recipe for Making 318.
Scientific Journals, Mortality amongst 85.
Scraps for Scientific Museum 334.
Sea and its Contents 59.
Sewing Machine, (Gibb's Interference) 373.
Shingles, Improved 115.
Ship Fastening, Yellow Metal 273.
Silicium, Alloys of 64.
Skirts, Ladies' Hoop 292.
Soap, Soluble Glass 129.
Soda Ash, How to Make 318.
Soldiers, Gold 371.
Sorgho, Sacre Experiments 40.
Sorghum Sugar 94, 104, 166, 361.
Sound and Music, Cause of 302.
Spectacles and the Eyes 251.
Spirits, Rectification of, &c. 249.
Sprains Cured 364.
Starch, Manuf'r of 77, 413.
Steamship "Great Eastern" 94.
Steam Engines, Performance of 251.
Steam Engines, (Blanchard) 381.
Steel, Testing the Qualities of 259.
Stocking Frame, origin of 387.
Strychnine 22.
Stumps, Blasting 227.
Sugar, Clarifying with Soap 249.
Sugar from Starch, Corn, &c. 377.
Sun Dial, New Gnomon for 323.
Sun Stroke, Remedy for 393.
Swill Milk, 349.

T
Teeth, Do Alkalies injure the 3.
Teeth, Filling with Tin 288.
Teeth, Extracting without Pain 381.
Telegraph, Atlantic 406, 413.
Telegraph, Discovery of 335.
Telegraph Cable 13, 29, 285, 317, 374, 389, 390 (3 Fig.) 398, 400, (2 Fig.) 213.
Telegraph Cable, Connecting (2 Fig.) 213.
Telegraph Cable, Machinery for paying out 293, 310.
Telestereoscope 149.

Thermometer Dial 134.
Thimbles, Manuf'r of 126.
Timber, Can there be a scarcity of in the U. S. 270.

W
Warts, Cure for 142, 229, 299.
Warts and Moles, Removing 352.
Watchmaking, American 108.
Watchmaking by Machinery 405.
Water Purifying and Filtering 237.
Water, Cooling 243.
Waters, Explosive 299.
Wells, Petrifying 291.
Wheels, Toothed 85.
Whitewash, 390.
Wines, California, 50, 105.
Wines, Adulteration of 179, 180.
Wines and Vines, American 262.
Wire Rope, Strength of 376.
Wood, Protecting from fire 165.
Wood, Bending 370.
Writing, To Restore 371.

Patent Claims.

A
Acid, Sulphuric 42, 347.
Aldometer, 403, 410.
Alarms, Burglar's 27, 34, 211, 259.
Alarms, Pocket Book 114.
Alarms, Electro Magnetic 323, 370.
Alarms, Marine 306.
Alkalies, Preserving 18.
Amalgamators, 59, 178, 402.
Anchors 230.
Anchors, Floating 230.
Anchor Rail 410.
Andiron 403.
Apple Slicer 58, 298.
Apple Corer 202, 394.
Apple Parer 354.
Aquariums, (Design,) 315.
Arithmetic, 98, (2), 291.
Ash Sifter, 339.
Augurs, Expansive 250.
Augurs, Securing Cutters to 402.
Awns and Tools 258.
Awning Frame for Horses 34.
Awning, Metallic 275.
Axe Poles 370.
Axioms, Journals of 27.
Axioms, Lubricating 42.
Axioms, R. R. 314.
Axioms, Upsetting 354.
Axioms 242, 378.
Axioms Boxes and Journals 210.
Axioms Boxes, Disconnecting 330.
Axioms Brace for Carriages 178.

B
Bag Opener 186.
Bag Clasp 250.
Bags, Paper 210, 355.
Baking and Cooking Apparatus 299.
Balance Iron for Mill Stones 106.
Balance, Coin 138.
Bale Ties 234.
Band Fastening for Cotton Bales 34, 66, 299, 402, 410.
Banding Machine 107.
Barrel Machines 74, 211, 355, 394.
Barrel Head Machines 154, 210, (2), 298, 362, 370.
Barometer 74.
Barometer Cases 82.
Bars, R. R. 178.
Bars, Rolling R. R. 346.
Baths, Shower 42.
Bathing Apparatus 304.
Bats, forming for Felting 395.
Bayonet Fastening 122.
Beams, Pulling 62.
Beams, Connecting 258.
Bees Lixes 66, 106, 114, 210, 258, 290, 314, 322, 395.
Beef Steaks, Machine for Pounding 387.
Beer, Manufacture of 322.
Beds, Invalid 18, 178, 266, 330.
Bed Bottoms 42, 138, 202, 203, 258, 306, 322, 331, 394, 410.
Bedsteads, Iron 74, 202, 234.
Bedsteads, Spring 139, 230.
Bedsteads, Fastening 218, 322, 355.
Bedsteads, 275, 314, 322, 346, 347.
Bedsteads, Rails of 275.
Bedsteads, Sofa 290.
Bedsteads, (Design,) 363, (2), 381.
Belts, Ringing 90.
Belts, Operating on Steamers 90.
Belts, Hanging 154.
Belts, Diving 242.
Belts, Fog 258.
Belts, House 330.
Bellows 210.
Belt, Tool 13.
Belt, Fastening 90.
Belt Shifter 178.
Belting, Mode of 130.
Belting, Lap Joints for 186.
Belting, Round 330.
Bench, Joiners' 420.
Bench, Carpenters' 410.
Bench Hook 219.
Bending Machines, Wood 50, 218, 282.
Berthas, Life Preserving 2, 195.
Billiard Tables, Beds for 218.
Billiard Tables, Pocket Supporters of 330.
Billiard Tables, Cushions for 114, (2) 122, 154, (2), 282, 395.
Bit Holder 34, 146, 266.
Bits, Expansive 290.
Bits Attaching to the Brace 322.
Bits, Variable Boring 395.
Blind Rods, Wiring 2.
Blind Slats, Forming Round Tenons on 82.
Blind Slats, Setting Staples in 410.
Blind Fixtures 163.
Blinds, Window 210, 230.
Blinds, Window Operating 242, 378.
Blocks, Ships 179.
Block for Repairing T. Rails 296.
Blow Pipes 230.
Blowing Apparatus 274.
Boats, Surf & Life 2, 27, 266, 307.

Boats Ferry 98
Boats, Ice Breaking 107
Boats, Lowering and Detaching 230
Boats, Metallic 234
Boats, Canal 370, 402
Boat Frames 299
Boilers, Steam 34, 58, 114, 122, 210, 220, (2), 224, 282, 306, 354, 379
Boilers, Locomotive 43, 276
Boilers for Heating Buildings 98
Boilers, Supplying Water to 210
Boilers, Safety Apparatus for 218
Boilers, Rotary Heating 330
Boiler for Table Knives 146
Bolt for Saws 10
Bolt Locket 18
Bolt Machine 74, 210, 410
Bolt, Flour 90
Bolt, Threading Machine 106
Bolt, Door 251
Bolt for Brackets 234
Bolt, Spring 370
Bolting, Dusting and Separating Machine 251
Bomb Shell 50
Bomb Lance 403
Bomb Lance, Wings of 114
Bonnet Pressing Machine 356
Books, Turning Leaves of 190
Books, Trimming 230
Boot Press 210, 282, 363
Boot Tops, Trimming 258
Boot Fronts, Cutting 378
Boot Blacking Machine 164
Boot Jack 299
Boot Jack and Burglar's Alarm 260
Boots and Shoes Lasting 10
Boots and Shoes, Uppers of 34, 82
Boots and Shoes, Waterproof 82, 178
Boots and Shoes, Metal Tips for 146
Boots and Shoes, Attaching Rubber Soles to 186
Boots and Shoes, Cutting Heels of 219, 370
Boots and Shoes, Cutting Soles of 370
Boring Machine 42, 122, 354
Bottle Washer 2, 275
Bottle Stopper 186, 354, 355
Boxes, Turning Wooden 90
Boxes, Car 154, 186, 235
Boxes, Paper 178
Boxes, Money for Carriages 202, 203, 288
Boxes, Dumping 230
Boxes, Carriage 243
Boxes, Ballot 298
Bracket, Shelf 61, 88
Brad, Punch 347
Brakes, Car 10, 66, 146, 162, 174, (2), 178, 218, 219, 234, 242, 358, 359, 360, 307, 314, 315, 347, 379, 386
Brakes, Hemp 34, 90, 178, 382, 410
Brakes, Wagon 50, 154, 322
Brakes, Car, Rubber for 58
Brakes, Automatic 98
Brakes, Magnetic 162
Brakes, Carriage 314
Brakes for Hand Trucks 394
Brack Duster 378
Breakwater Frames 275
Brick Machines 10, 18, 42, 90, 178, 194, 203, 242, 275, (2), 330, 338, 379, 402
Bricks, Burning 186
Bricks, Making 314
Bridges 18, 314, 402
Bridges, Trussed 27, 74
Bridges, Truss Frames for 251
Bridges, Constructing 219
Bridges, Bearing Blocks for 378
Broiling and Toasting Apparatus 410
Brooms, Making 107, 146, 174
Broom Splints 259
Brooming Liquid 42
Brushes 290
Brushes, Making 66
Brushes, Tooth 90
Brushes, Whitewash 314
Brush Blocks 292
Bucket, Hoisting 74
Bucket, Coal Dumping 363
Bucket, Lift, Ice Freezing 266
Buckets, Harness 82, 290, 378
Buildings, Protecting from Fire 34
Bullet Machine 82
Bullet Mold 195
Bung Cutter 34
Buoy, Life and Treasure 114, 230, 274
Bureau and Washstand 154
Burners, Gas 27, 34, 234, 259, 331, (2), 338, 384, (2), 409
Burners for Vapor Lamps 58, 282, 290, 298, (2), 306, 322, 379, 396, 410
Burners and Tubes for Vapor Lamps 371
Burning Fluid 380
Burnisher 266, 411
Butler Worker 66, 90, 154, 379, 387
Butter Bucket 403
Buttons 162
Button Hole Cutter 338
Button Fastening 346

C

Cabinet for Sewing Machines 339
Cables, Telegraph 162, 178
Cans, Sealing 2
Cans, Oil 138
Cans, Instrument for Opening 146
Cans, Preserve 290 (2), 322, 346, 386
Can Covers (Design) 387
Cane Planters 196
Cane, Omnibus 242
Candy Machine 74, 290
Candlesticks 82
Cannon, Breech Loading 331
Cautchouse, Treatment of 394
Caps, Chimney 2
Caps for Nail Heads 42
Caps, for Bottles, &c 66, 322
Cap Waste, Pickling 339
Capstans, Ships 275
Cars, Sealing R. R. 50
Cars, Dumping 196
Cars, Propelling by Horse Power 106
Cars, Ventilating 282
Cars, Night 298, 386 (2)
Cars, Safety Apparatus for 298
Cars, Preventing from Running off the Track 338
Cars, Replacing on the Track 339
Car Seats, Cushions for 274
Car Box Cases, for Pedestals 362
Car Wheels, Casting 130
Cards, Weighing 266
Cards, Currying 186
Card Plates for Trucks 296
Carding Machines 50, 90, 203
Carding Machines, Cleaning top Cards of 106, 114
Carding Cylinders, Clothing for 218

Carpet Fastener 90, 162, 306
Carpet Stretcher 178, 219, 411
Carpet Beater 203
Carpet Roller 251
Carpet Cleaner 403
Carpet Sweeper 403
Carriage Tops, Adjusting 2
Carriage Prop 27
Carriage Tops, Joints of 74, 138
Carriage Tops 154
Carriages for Children 378
Carriages, Wear Iron for 10
Carriages, Fastening Shafts to 50, 154
Castor and Fan, Automatic 58
Castor, Bottle 106
Castors, Furniture 132, 194, 274
Castor, Syrup 250, 283
Cartridges 10, 18, 346, 410
Carriage Case 290
Carving, Wood 130
Ceilings, Fire Proof 254
Cement for Leather, Waterproof 378
Cerotype, Feed Motion for 403
Chain Machine 58, 154, 370
Chains, Sheet Metal 282
Chains for Jewelry 210
Chains for Threshing Machines 363
Chairs, R. R. 66, 162, 186, 315 (2)
338, 354, 363
Chairs, Folding 50
Chairs, Ventilating 98
Chairs, Rotary 99, 194
Chairs, Portable 114
Chairs, Infant's Exercising 122
Chairs, Dental 146
Chairs, Rocking 194, 362
Chairs, Reclining 290
Chairs, Blast Producing 315
Chairs, Obstetrical 410
Chair Rails 354
Chair Backs 363
Charcoal, Converting Peats into 347
Check Cancellor 196
Cheese Hoops, Metallic 284
Cheese Vat 339
Cherries, Storing 210
Chimneys, Wind Guard for 394
Chisel, Mortising 10
Choppers, Meat 254, 298
Chucks for Centering 386
Churns 10, 50, 98, 114, 130 (2), 146, 162, 186, 194, 195, 242, 260, 266, 274, 275, 290, 330, 346, 347, 354 (2), 362 (2), 378, 402, 403
Churn Dasher 50
Cigars 242
Cigar Machine 194
Cigar Lighters 98, 218, 284
Clamp Saw 2, 138
Clamp for Centering Hubs 82
Clamp, Clothes 90
Clamp for Curving Hair 178
Clamp for Holding Wood 186
Clamp for Engravers 346
Clamp Floor 363
Clamping Apparatus 234
Clasp for Metallic Hoops 106, 235
Clocks 130
Clocks, Calendar 90, 210
Clocks, Alarm 354, 355
Clock Case (Design) 43, 51, 59, 131, 283
Clocks, Water 74, 188, 196, 282, 410
Clocks, Milk 376
Cloth, Elastic Gore 18
Cloth, Sheaving 107
Cloth, Turning down the edges of 274
Clothes Wringers 106 (2), 315, 379
Clothes Racks 120, 154, 394
Clothes Dryers 242, 362, 370, 379
Clothes Pins 307
Clothes Frames 330, 346, 370
Clothes Horse 403
Coal Breaker 66, 210
Coal Slatting 98, 242
Coal Splitter, 202
Coal, Hoisting and Dumping 258
Cocks, Spring Valve 122, 306
Cocks, Supply 146
Cocks, Steam 403, 410
Coffee Cleaner 74, 362
Coffee Roaster 250
Coffee and Tea Pots 242, 395
Coffee, Apparatus for Making 386
Coffins 210, 275
Combs, Curry 42, 174
Composition for Covering Meats 34
Composition for Miniature Cases, &c. 410
Compass Stand 203
Condensers for List Speeders 2
Condensers, Surface 122
Condensers for Steam Engines 395
Conduits 146
Coolers 27
Coolers, Butter 363
Coolers for Breweries 18 (2)
Cooking Utensils, Cast Iron 266
Cooking Range and Gas Generator 274
Cord, Plaited 218
Cordage Machine 74
Cordage, Braiding 346 (2)
Core Spindles for Casting 59
Cores, Dry Sand 138
Cork Sole Staff 34
Cork Cutter 354 (2)
Corn Shellers 10, 34, 243, 250, 258, 266, 298, 402, 410
Corn Planters 10 (3), 66, 107, 114, 122, 174, 178, 186 (2), 218, 250, 266, 274, 290, 298, 315, 338, 354, 402 (2), 410
Corn Stubble, Cutting 2
Corn, Severing the Ears from the Stalk 66
Corn Stalks, Cutting Standing 410
Cornice Mach. for Rolling 180
Cotton and Linen Waste, Treating 18
Cotton Picker 42
Cotton Cleaners 58, 106, 296
Cotton, Preparing Plastic 138
Cotton Gins 146, 154, 186, 202 (2), 219, 234, 274, 275 (2), 290, 347, 363
Cotton Gins, Feeder for 50
Cotton, Drawing 196
Coupling, Car 10, 138, 146 (2), 174 (2), 234, 242, 258, 282, 298, 307, 338, 354, 378, 410
Coupling, Car, Buffer Heads for 274
Coupling, Pipe 2, 280, 346
Coupling for Shafting 60, 251, 338
Coupling for Melodeons 98
Coupling, Pump 274
Coupling, Belt 334
Coupling, Hose 323
Coupling for Horse Cars 379
Cow Catchers for Locomotives 42
Cracker Machine 330
Cradles, Grass 58, 296
Cradles, Spring Rocking 298
Cradle and Rocking Chair 307
Crank, Substitute for 386
Creepers 154
Cribs for Stables 34
Crimp, Boot 162
Cues, Billiard 203
Cutlery 44, 66 (2), 82, 98, 106 (2), 403

D

Daguerreotype Plates, Cleaning 346
Dampers, Gate 122
Dampers, Rotary 178
Dampers for Hot Air Furnaces 284
Dental Plates, Atmospheric 250
Desk Sets for Schools, 242
Desks, Writing 322, 410
Diamonds, Setting 34
Diapers, Substitute for 202
Digging Machine 50
Dishes, Earthenware 303
Ditching Machine 50
Diving Apparatus 27
Dividers, Mathematical 146, 218
Doll's Heads 242
Door Knobs, Rosette 74
Door Guard, Elastic 90
Door Fastener 258, 330
Door Sills 234
Door Plates 362
Doors, Opening and Closing 307
Dough, Rolling 106, 259
Dough, Raising 259
Dovetailing Rotary Cutters 46
Dovetailing Tool 202
Dowel Pins 266
Drafting Instruments 138
Drawers for Closets 275
Drawing Rolls, Covering for 174
Drawing Instruments 379
Dredging Machine 258
Drills, Grain 42, 82, 379, 403
Drills, Rock 42, 74, 106, 394
Drills, Self-Feeding 90
Drills, Power and Hand 307, 346
Drills, for Gas Pipes 315
Drilling and Milling Machine 34
Drill bits for Star Houses 18
Driving Wheels, giving Adhesion to 268
Drums, Military 210
Dyeing Process 146
Dyeing Apparatus 174
Dyeing Yarn, Part-colored 234
Dynamometer 130

E

Earth Moving Machine 82
Easels, Painter's 18
Eaves Troughs, Suspending 2
Eaves Troughs, Brace for 282
Eels, Skinning 34
Egg Beaters 106, 122, 235, 274
Electric Currents, Regulating and Measuring 280
Electrotype Plates 306
Elevators, Extensive 42
Elevators, Hay 154, 395
Engines, Carding 2, (2), 27
Engines, Gas 282
Engines, Hydraulic 34, 174
Engines, Locomotive 138, 251, 259, 394, 410
Engines, Pumping 98
Engines and Pumps, Oscillating 130, 146, 203
Engines, Rotary 27, 138, 154, 178, 218, 234, 259, 338
Engines, Revolving Cylinder 234
Engines, Steam 282, 323, 354, 386, 395
Engines, Electro-Magnetic 387
Engraving Machine 323
Envelopes, Letter 275
Evaporators, Sugar 10
Evaporators, Brine 274
Evaporators, Arrangement of Steam Coils in 346
Excavators 18, 154, 322, 402
Excavators, Rotary 74
Excavators, Snow 82

F

Fabrics, Woven Tucked 298
Fabrics, Thick Woven 298
Fabrics, India Rubber 339
Fabrics, Elastic 410
Face Box, for Omnibuses 387
Fats, Preparing for Candles 50
Fatty Matters, Extracting 274
Faucets 354, 355
Faucets, Measuring 354
Faucets, Casting 307
Faucets, Locking 2
Feather Dressing Machine 66
Feed Water Pipe for Steam Boilers 74
Feed Water Apparatus for Steam Boilers 322
Feet Warmers 128
Felt Cloth 178
Fences, Wire 34
Fences, Field and Portable 122, 130, 138, 194, 210, 218, 251, 266, (2), 274, 380, 381, 386 (2), 410
Fences, Connecting 162, 202
Fences, Lattice Iron 314
Fences, Brace for Locking 379
Fences, Metallic 364
Fence Post 250, 308
Fertilizing Apparatus 107, 202, 299, 402
Fibers of Tampico Hemp 355
Fibers Separating 386
Fibrous Substances Preparing for Spinning 130
Fibrous Substances, Treating 18, 114, 219
Figure Cutting out of Sheet Metal 10
File 162
File Cutter 155, 250
File Machine 298
File Portfolio 339
Filtering Apparatus 104, 255
Fire Arms, Revolving 122, 235, 282, (2), 259, 322, 331, 347, 379, 402, 403

122, 130 (2), 178, 218, 242, 290, 298, 346, 354, 386, 394, 395
Cultivators, Cotton 58 (2), 355
Cultivators, Rotary 331
Cultivator, Teeth 10, 58, 78
Curtain Rollers 42
Curtain Fixtures 74, 122, 218, 266
Cutters for Boot and Shoe Soles 18
Cutters, Cake 90
Cutters, Vegetable 131, 274
Cutters, Meat 218, 234, 266
Cutters, Bread 82, 178
Cutters, Provision 322
Cutters, Ice for Rivers 174
Cutters for Tongueing and Grooving 243
Cutters, Sharpening Rotary 266
Cutting Brush from Cotton Fields 186
Cutting Leaves from Sugar Cane 234
Cut-off for Steam Engines 162
Cushions for Billiard Tables 114 (2), 122, 154 (2), 282
Cushions for Car Seats 274
Cylinders for Locomotives 90
Cylinders for Grinding 298
Cylinder, Repairing Cast Iron 386

Fire Arms, Breech Loading 58, 90, 274, (2), 322, 354, 355, 370
Fire Arms, Hair Triggers for 50
Fire Arms, Lock for 50
Fire Arms, Priming 69
Fire Arms, Rotating Breech 98
Fire Arms, Nipple Guard for 174
Fire Arms, Repeating 218, 395
Fire Arms, Primer for 275
Fire Box and Grate 194
Fire Box for Locomotive Boilers 275, (2), 370
Fire Places 386
Fire Escape 410
Fish, Catching 306
Flanges, Bending 68
Flasks, for Casting Wheels 178
Flasks, Powder 194
Flexomans 122
Float, Ice Preserving 230
Floors, Marquetry 162
Floor Bolt 18, 146, 186, 410
Floor Packer 218
Fly Frames for Printing Presses 90
Fly Wheel, Regulating 106
Foot Cleaners 304
Forge, Portable 90
Forks, Hay and Manure 98, 114, 290
Frames, Oval, Preparing 402
Frames, Preparing for Gilding 325
Frames, Window 194
Freezers, Ice Cream 168, 234
Frogs, for R. R. Crossings 274, 386
Fruit Gatherer 66, 82
Fruit Dryer 230
Fuel, Artificial 106, 180
Fuel and Water Attachment to Steam Engine 130
Funnels, Connecting Metallic 234
Furnaces 66, 138, 258, 355
Furnaces, Blast 10
Furnaces, Locomotive 122, 178, 275, 338, 355
Furnaces, Bagasse 122, 283, 331
Furnaces, for Tempering Scythes 130
Furnaces, Hot Air 178, 234, 242, 315, 338
Furnaces, Puddling 250
Furnaces, Stove and Boiler 339
Furnaces, for the Manufacture of Zinc Oxide 363
Furnace and Range 386
Furniture, Constructing 162, 202

G

Gages, Steam Pressure 34, 66, 90, 163, 195, 234, 355
Gages, Water 50
Gages Attaching to Steam Boilers 82
Gages for Dovesails 122
Gages, Magnetic 355
Gages, Alarm 379
Gage Guide for Sawing Timber 138
Galvanic Batteries 174, 178, 242
Garments, Seamless Felt 59
Garments, Drafting 178
Gas, Manufacture of 218, 315
Gas, Carbonic Acid 275
Gas, Illuminating 379
Gas, Regulating the Issue of by Electricity 299
Gas Lighting by Electricity 31, 203, 242
Gas, Purifying 386, (2), 394
Gas, Condensing and Purifying 386
Gas, Generating 394
Gas Tubes, Extension 10
Gas Apparatus 18, 314, 330, (2)
Gas Apparatus, Valve in 378
Gasometer and Air Pump 266
Gasometer, Counterpoising 378
Gates, Farm 130, 210
Gates, Opening and Closing 34, (2), 58, 250, 298
Gates, Canal Lock 74
Generators, Gas 2, 18, 242, 282, 362
Generators, Gas Cleaning 234
Generators, Steam 42, 50, 58, 259
Gilding on Glass, Protecting 274
Girders, Wrought Iron 280
Gizlers' Tins, Cutting 330
Globe, Illustrating Conical Section of 130
Gloves, Knit 362
Glove Stock 99
Gold Washer 194, 268
Governor Vane for Steam Engine 74
Governors for Machinery 180
Governors for Steam Engines 138, 266, 362, 386
Governors, Speed 146
Governors for Horse Power 307
Grain Dryers 10
Grain Cleaners 290, 314, (2), 330, 362, 363, 379
Grain Measurer 290
Grain Weigher 323
Grain Weighing and Registering 379
Grain Measuring, Bagging, &c. 314, 322
Grain Securing in Sheaves 244
Grain Binders 27, 138, 284, 290
Grain, Fanning and Assembling 394
Grain, Cooling and Ventilating 410
Grapes, Pressing 378
Grapple 234
Grapple, Submarine 810
Grates, 50, 58, 306
Grates for Locomotives 379
Grates for Steam Boilers 251, 378
Grave Borders 59
Gravimotometer 106
Gridiron, Fold ng 395
Grinding and Polishing Machine 66
Grinding and Cutting Machine 322
Gun Lock 162
Gun, Carriage 361
Gun, Spring 154
Gun Needle 154
Guns, Centrifugal 387
Guns, Canoe 196, 195, 234

H

Hand Exerciser for Musicians 243
Handles, Turning Tool 234
Handles for Screw Drivers 338
Hangers for Shafting 194, 330
Hammers 50
Hammers, Blacksmith's 266
Hammers, Trip 402
Harnesses 410
Harness Traces, Fastening 106
Harness Trees 154
Harpoon Pads 351
Harpoon 58
Harpoon and Lance 194, 410
Harrows, Rotary 410
Harrows 178, 179, 210, (2), 290, 306, 314, 394, 395, 410
Harrows, Revolving 194
Harvesters, Grain and Grass 10, 27, (3), 50, (2), 74, 90, 107, (3), 114, 130, 138, 139, (2), 146, 162, 174, 186, (2), 194, 196, 202, (4), 203, 210, (3), 218, 234, 242, (2), 250, 261, 288, (2), 289, 290, (4), 298, (2), 306, 309, 314, 315, 322, (2), 331, (2), 340, 344, (2), 354, (2), 394, 395, 410
Harvesters, Corn 106, 174, 254, 250, 274, 338, (2), 379
Harvesters, Bean 98
Harvesters, Cotton 274
Harvesters, Hemp 338
Harvesters, Finger Bars for 106, 210, 291, 354
Harvesters, Cutters of 2, 90, 194, 251, 258, 307, (2)
Harvesters, Swathing Apparatus for 58
Harvesters, Supporting Reels of 122
Harvesters, Rakers and Binders for 174, 354
Harvester Attachment to 106
Harvester, Track Clearers for 138, 202, 258, 354
Hale, Forming Brims of 162
Hale Ventilating 230
Hale Bodies, Hardening 18, 42
Hale Bodies, Forming 42
Hale Body Machine 235
Hatches of Vessels 114
Hatchets 274
Hatchet Heads, Swedging 2
Haycock Protector 234
Hole Rest, 138
Holders, Steam 27, 242, 274, 370, 379, 402
Holders, Stove 234
Holders, Gas 174
Holders and Coolers 174
Hoels, of Boots and Shoes, Revolving 322
Heliographic Instruments 322
Hemp Cutter 90
Hides and Leather, Dressing 362
Hides, Tanning 394, 395
Hinge, Spring 32
Hinge for Daguerreotype Cases 314
Hinges 195, 394
Hinges, Casting 130, 370
Hoes, 138, 243
Hoes, Seed Planting 266
Hoisting Apparatus 82, 178, 282, 316
Hoisting, Apparatus for Ice 306
Holder for Planing Knives while Grinding 250
Hornay Machine 50
Horn, Artificial 50
Hoops, Cotton Bale 202, 210
Horizon, Determining the Artificial 146
Horse Powers, 27, 242, 266, 298, (2), 314, 315, 371, 379
Horse Power for Cross Cut Sawing 154
Horse Power Wheel and Axle Attachment 202
Horse Shoes 211, 346
Horse Shoes, Bending 130
Horse Shoes, Elastic 34
Horse Shoe Machine 211, 259, 266, 274, 314
Horse Collar and Harness 163
Horse Collar Blocks 250, 411
Horse Collar, Stuffing 354
Horses Floating across Rivers 98
Hose, Tensile 230
Hose Pipe, Coasting 34
Hose Carriage 50
Hub Borer 114
Hub Bands 219
Hub Machine 290
Hubs for Carriage Wheels 2, 122, 243, 386
Hubs, for Carriage, Metallic 331, 362
Hulls, Turning Bands of 130
Huller, Rice 18, 218, 274, 282, 330, 355, (2), 362
Hullers, Clover Seed 242, 298
Hulling Mills, Stone Dress for 219, 331
Husking Machines 42, (3), 50, (2), 58, (3), 82, (2), 90, (5), 130, 162, 186, (3), 203, 210, 218, 282, 290, 299, 306, 330, 355
Husking, Palm 82
Husking and Shelling Glove 146
Hydrants 146, (2), 174, 186, 210, (2)
Hygrometer, Actuating the Index of 306

I

Ice Stand 410
India Rubber, Restoring Vulcanized 163, 339
India Rubber, Utilizing Waste 290
India Rubber, Manufacture of 299, (2)
India Rubber Goods, Hard 370, 411
Indicator, Water 50
Indicator for Gas Meters 90
Indicator, Speed 196, 162
Indicator, Steam Boiler 203, 314
Indicator for R. R. Station 250, 251
Ink Rollers 322, 346
Inkstand 74, 219, 274
Iron, Manufacture of 74
Iron, Melting and Refining 42
Iron, Process of Coasting 50
Iron, Refining 130
Iron and Steel, Hardening 234, 250
Iron Pipe, Forming 234
Iron, Smoothing 2, 74, 366, 314
Irregular Forme, Machine for Cutting 306, 322
Irregular Forme, Machine for Turning 306
Ivory Frame Composition 330

J

Jacks, Lifting 82, 106, 138, 307
Jack, Mechanical 287
Jars Preserving 259
Jewelry, Fastening for 34
Joint for Gas Tubes 162, 219, 258
Joint for Metal Rods 186
Joint for Spectacle Frames 266
Joint for Condenser Tubes 370
Journals of Rolling Mills 98
Journals, Tool for Turning 138
Journals Lubricating 154
Journals, Reducing Friction of 178
Journal Boxes 125, 138, 202, 306

K

Keys, Metal 51
Kettles, Lead Rendering 34, 82, 362
Kettles, Casting Iron 379
Kettles, Casting Sugar 210
Keys for Door Locks 90
Keys, Safety Drop for 298
Kilns, Lime 74, 90, 106, 146, 202, 211, 266, 330
Kiln, Brick 282, 331
Kneading Machine 18, 99
Knife, Drawing 122
Knife Polisher 306, 395

210, (3), 218, 234, 242, (2), 250, 261, 288, (2), 289, 290, 274, 275, 282, (3), 283, 290, (4), 298, (2), 306, 309, 314, 315, 322, (2), 331, (2), 340, 344, (2), 354, (2), 394, 395, 410
Harvesters, Corn 106, 174, 254, 250, 274, 338, (2), 379
Harvesters, Bean 98
Harvesters, Cotton 274
Harvesters, Hemp 338
Harvesters, Finger Bars for 106, 210, 291, 354
Harvesters, Cutters of 2, 90, 194, 251, 258, 307, (2)
Harvesters, Swathing Apparatus for 58
Harvesters, Supporting Reels of 122
Harvesters, Rakers and Binders for 174, 354
Harvester Attachment to 106
Harvester, Track Clearers for 138, 202, 258, 354
Hale, Forming Brims of 162
Hale Ventilating 230
Hale Bodies, Hardening 18, 42
Hale Bodies, Forming 42
Hale Body Machine 235
Hatches of Vessels 114
Hatchets 274
Hatchet Heads, Swedging 2
Haycock Protector 234
Hole Rest, 138
Holders, Steam 27, 242, 274, 370, 379, 402
Holders, Stove 234
Holders, Gas 174
Holders and Coolers 174
Hoels, of Boots and Shoes, Revolving 322
Heliographic Instruments 322
Hemp Cutter 90
Hides and Leather, Dressing 362
Hides, Tanning 394, 395
Hinge, Spring 32
Hinge for Daguerreotype Cases 314
Hinges 195, 394
Hinges, Casting 130, 370
Hoes, 138, 243
Hoes, Seed Planting 266
Hoisting Apparatus 82, 178, 282, 316
Hoisting, Apparatus for Ice 306
Holder for Planing Knives while Grinding 250
Hornay Machine 50
Horn, Artificial 50
Hoops, Cotton Bale 202, 210
Horizon, Determining the Artificial 146
Horse Powers, 27, 242, 266, 298, (2), 314, 315, 371, 379
Horse Power for Cross Cut Sawing 154
Horse Power Wheel and Axle Attachment 202
Horse Shoes 211, 346
Horse Shoes, Bending 130
Horse Shoes, Elastic 34
Horse Shoe Machine 211, 259, 266, 274, 314
Horse Collar and Harness 163
Horse Collar Blocks 250, 411
Horse Collar, Stuffing 354
Horses Floating across Rivers 98
Hose, Tensile 230
Hose Pipe, Coasting 34
Hose Carriage 50
Hub Borer 114
Hub Bands 219
Hub Machine 290
Hubs for Carriage Wheels 2, 122, 243, 386
Hubs, for Carriage, Metallic 331, 362
Hulls, Turning Bands of 130
Huller, Rice 18, 218, 274, 282, 330, 355, (2), 362
Hullers, Clover Seed 242, 298
Hulling Mills, Stone Dress for 219, 331
Husking Machines 42, (3), 50, (2), 58, (3), 82, (2), 90, (5), 130, 162, 186, (3), 203, 210, 218, 282, 290, 299, 306, 330, 355
Husking, Palm 82
Husking and Shelling Glove 146
Hydrants 146, (2), 174, 186, 210, (2)
Hygrometer, Actuating the Index of 306

Knife Cleaner 307, 370
Knife Sharpener 386
Knife for Shaving Leather 368
Knife and Spoon Cleaner 307, 370
Knives for Smoothing Staves 269
Knives, Hay 258
Knitting Machines 106, 107, 194, 234, 302, 379
Knobs, Door 130
Ladders, Fire Escape 27, 347, 363
Ladle, Culinary 202

Mills, Grain 178, 202
Mills, Saw 202, 242, 251, 291
Mills, Rolling 232
Mills, Quartz 296
Mills, Sugar 275
Mills, Sugar Cane 296, 354
Mills, Chasing 298
Mills, Bushes 195, 234
Mills, Pick Holders 402
Mills, Spindles, Adjusting the Steps of 402
Millstone Dress 122, 174, 178, 274, 275, (2), 315, 370
Millstones, Hanging 18
Millstones, Feeding 162
Millstones, Ventilating 354
Millstone Drivers, Bearings for 27
Mires, Cutting 402
Mining Machinery 218
Mosses, Implement for Shooting 290
Molds, for Casting Pencil Sharpeners 203
Molding, Saw 210
Molding, Planing 355
Mortising Machines, Reversing the Chisel in 66, 74
Mortising Machines, Gear of 138
Mortars, Hominy 210
Mosquito Bar 379
Motion, Producing 218
Motion, Converting 250, 371, 386
Motion, Rotary and Reciprocating 234
Motion, Changing 307
Motion of Machinery Registering 386
Motive Power, Obtaining 346, 394
Movements, Mechanical 122
Moving Machines 10, 18, 66, 106, 138, 154, 210, 258, 274, 282, 307, 322
Moving Machines, Cutters of 114
Moving Machines, Reel Supporters for 307
Muff for Ear, Check and Chain 355
Multiplying Numbers 98
Music Holder 82
Musical Instruments 174, 186, 314
Musical Instruments, Cutting Key Boards for 194

N

Nail Machine 58, 82, 230, 275, 299, 355, 378
Nails, Polishing Heads of 50
Nails, Covering Head of 139, 162
Nails, Clenching 194, 266
Nails, Horse Shoe 275
Nails, Forging 403
Nail Plate Feeder 402, 403
Needles, Sewing 314
Nets, Fishing 275, 346
Nets, Fly 288
Net Machine 27, 66, 130, 282
Nets, Forging 10
Nuts, Metallic 275

O

Oakum, Spinning 146
Oil Cans 122, 239 (2)
Oils, Factitious 34
Oils, Distilling 328
Ordinance, Repeating 290
Ore Washer 50, 194
Ore Crusher 230
Ores, Gold and Silver 106
Ores, Treatment of 295
Ornaments, Attaching to the Ear 322
Ovens, Bakers 56, 259, 410
Ovens for Cooking Stoves 275, 396
Overhauls, Straw and Wood 314
Oysters, Opening 34, 146

P

Packages for Dry Goods 410
Packing Rings for Steam Engines 27
Paddocks 10, 174
Paddles, Reciprocating 306
Paging Machine 174
Pans Roll (Designs) 403
Paints 378
Paint, Composition 139, 290
Paint, India Rubber 18
Paint, Mixing and Grinding 74
Paint, Vehicles 114, 146
Painting and Varnishing Machine 136
Pail, Milking 230
Paper Pulp 50, 256 (2)
Paper Pulp from Ivory 18
Paper Pulp from Reeds 306, 362
Paper Pulp from Wood Fibers 395
Paper, Manuf'r of 146
Paper, Writing 274, 275
Paper, Filling 378
Paper Folding Machine 74, 379, 395
Paper Feeding Machine 82
Paper Files 242
Paper Cutters 362
Paper Hangings, Hanging up and carrying off 370
Pans, Vacuum 98
Pans, Salt 114
Pans, Sheet Metal, 210
Pans, Evaporating 336
Pans, Dust 354
Pantaloons, 246
Pattern Plates for Dentists 347
Pavements, Iron 50, 219
Pavements, Connecting and Disconnecting 27
Pavements and R. R. Track combined 338
Pea Sheller 242
Peas, Seaming and Polishing 34
Peas, Beating from the Vines 55
Peds for Organs 196
Pegs, Blanks for 179
Pegs, Machines for making 203, 284
Pegs, Manuf'r of 387
Pegging Machine 10, 122, 379, 396
Pen, Fountain 42, 247
Pen and Pencil Case 260
Pen Cleaners and Holders 274
Pencil Sharpeners 27, 174
Pencil and Eraser 242
Pendulum, Compound 162, 210
Pendulum, Power 242
Pentagraph Engraving Machine 219
Pepper Box 174
Pessaries 402
Photographs 290
Photographs, Treating 130
Photographs, Removing from Glass to Paper 27
Photo-Lithography 230
Photo-Cameras, Diaphragm for 18
Photo-Cameras, Plate Frames for 178
Photo, Plate Holder 106, 314
Piano-Fortes 98, 114, 154
Piano-Forte Action 58, 250, 322, 331
Picturetypes 230
Picket, Screw 246
Pile for Rolling Beams 106
Pillars for Clock Movements 90
Pins, Diaper 82, 179

Pins, Machine for Sticking 114, 218
Pincers, Lathing 50
Pipes, Tobacco 290
Pipes, Cast Iron 282
Pipes, Attaching to Water Closet Basins 330
Pine Cutting Machine 307
Pistons, Metallic Packing for 10
Pistons for Steam Engines 261
Pistons and Piston Rods, Connecting 234
Pitchers, Water Cooling 74, 322, 371
Pitchers, Ice 250, 331
Pitchers, Molasses 90
Planes, Attaching handles to 34
Planes, Crozing 162
Planes, Floor 218
Planes, Beveling 230
Planes, Bench 322
Planes, Shoemakers' Edge 27, 362
Plane Irons, Securing 194
Plane Irons, Adjusting 338
Planing Machines 114, 323
Planing Machines, Securing Cutters in 347
Planing Machines Stock Cutters for 378
Pliers 315
Plugs, Fire 82
Plumb and Level 243
Plotting Instrument 154
Plows 42 (2) 55 (3) 59, 82 (2) 98, 106 (3) 114 (3) 146, 162 (2) 174, 178, 186, 195 (3) 203, 218, 230, 234, (2) 241 (2) 258, 296, 338, 339, 354, 370 (2) 378, 395, 402
Plows, Gang 42, 50, 98, 106, 154, 230, 275, 306
Plows, Snow 122, 130, 194, 218, 258
Plows, Hill side 42, 210, 354
Plows, Steam 58 (2) 202, 219
Plows, Sub Soil 82
Plows, Digging 82
Plows, Shovel 130, 202
Plows, Trenching 219
Plows, Mold Boards for 275
Plows, Cleaning Coulters of 298
Plows, Drain 346
Pockets, Securing 250
Polishing Machine 218
Polishing Apparatus for Watchmakers' Lathes 323
Portfolios 138
Post, Fence 234
Post Holes, Excavating 218
Post and Pile Driver 350, 362
Potato Digger 130, 138, 139, 250, 370, 403 (2)
Potato Planter 146, 174, 186 (2) 250, 266
Potato Rot, Treating 379
Pots, Tea and Coffee, 203
Pottery Ware, Manuf'r of 34
Power, Obtaining and Preserving 174
Presses, Cotton and Hay 66, 106, 122, 138, 154, 174, 178, 195 (2) 202, 218, 234, 243 (2) 250, 275, 330, 370
Presses, Printing, 58, 66, 74 (3) 82, 106, 114, 168, 242, 244, 266, 275, 290, 362, 386, 395 (2) 403
Presses, Hand Printing 130, 251, 330
Presses, Card Printing 274
Presses, Steam Cotton 122
Presses, Cheese 122, 306
Presses, Wine and Cider 130
Presses, Oil 42, 162, 234
Presses, Jack Screw 178
Presses, Tobacco 178
Presses, Ratchet 322
Presses, Operating 356
Press, Printing, Typans for 232
Press for Zinographic Printing 298
Pressing Machine for Tailors 322
Printing Machine 66
Printing Machine, Card 107
Printer, Percussion Cap 2
Projectiles, 82, 98
Projectiles for Rifled Ordnance 50
Projectiles, Fuses of 122
Propellers, 331, 347, 362, 870
Propellers, Marine 34, 114
Propellers for Canal Boats 194, 230, 362
Propellers, Attaching and Housing 347
Propeller Valve 306
Protractor, Surveyors 194, 303
Pulley Machine 362
Pulp, Ventilating 154
Pumps, 34, 74, 122, 130, 138, 186, 254, (2) 314, 354 (2) 362, 379, 411
Pumps, Ships 18
Pumps, Rotary 59, 138 (2) 174, 218, 354
Pumps, Packing for 98
Pumps, Ventilators for 90
Pumps, Buckets 163, 314
Pumps, Operating Pistons of 178
Pumps, Operating 186
Pumps, Portable 250
Pumps, Force, 258, 362
Pumps, Oscillating 234
Punch, Metal 355
Punching Machine 322

Q

Quadrant Pendulum 96
Quartz Crusher 232, 410
Quartz Crusher, Feed for 379
Quitting Frames 82, 330, 347

R

Radiators, Hot Water 219
Radiators, Syphonic 275
Radiators for Heating Buildings 363
Rafix, Life Preserving 174, 211, 219
Rails, R. R. 82, 146, 231, 256, 278, 386, 410
Rails, Splice for Joints of 218, 378
Rails for Streets 266
Rail R. R. Fastening for 298
Rail Splice, Connecting 370
Rail for Switching Cars off the Track 410
Railroads, Constructing 202
Railways 66, 234
Railways, Circular 2
Railing, Iron 354
Rakes, 2, 42, 106, 266
Rakes, Harvester 2, 18, (2), 27, 58, 98, 106, 146, 151, 195, 211, 259, 274, 275, 307, 314, 322
Rakes, Horse 122, 202, 242, 355, 410
Raking and Loading Hay 354
Rams, Hydraulic 322
Ramming, Machine for R. R. 10
Rammer for Revolvers 259
Rangs, Fronts, (Designs) 355
Rangs, Water Backs for 194
Ratan Machine 154
Reach, Extension 194
Reapers, Hand 162
Reapers and Mowers 42, 114, 194, 259, 266, 290, 298, (2) 392, 387, (2), 403
Reaping Machine, Guard Finger for 42
Rectifying Apparatus 347, 370
Reed Stope for Musical Instruments 24
Reels, Twine 50
Reflectors, Light 331
Refrigerators 195, 250, 338, 362, 363
Refrigerators, Table 202
Regulators, W. 2, 338, 379, (2), 410
Regulators, Wind Wheel 18
Regulators for Locomotives 50
Regulators for Time Keepers 242
Regulators for Roving 234
Regulators, Valve 355
Regulators, Stove 363
Regulators for Supplying Water to Steam Boilers 378
Regulators, Steam Boilers 307
Register, Hot Air 42, 210
Register, Door 230
Register, Omnibus 306, 378
Register, Clock 354
Register, Time, for Workmen 355
Register and Ventilator, Hot Air 275
Rein Holder 194
Rest, Head 2
Retorts, Gas 10, 106, 130, 230, 251, 307, 314, 330, 339, 395
Retorts, Coal 274
Retorts for Distilling Oil from Coal 331, 394
Rice, Cleaning 18, 50
Rice, Brushing 66
Rice Pounder 395
Rifle, Breach Loading 305
Rigging of Vessels, Worming, Ac. 298
Ring Bolt 262
Riveting Machine 339
Roaster, Coffee 98
Roasting Apparatus for Stoves 34
Rods, Calender 258
Roller for Wires and Shades 295
Roller for R. R. Bars 315
Rollers, Drawing 347
Rollers, Steel 379
Rollers, Ink 308
Rolling Composition 10, 18, 34, 230, 234, (2), 282, 395, 410
Roofing, Metallic 98, 338
Rope Machine 162, 410
Row Locks 250
Rules, Carpenters' 154, 370
Ruler 274

S

Sack Fastener 2, 50
Sack Holder 139
Saddles, Riding 107
Saddles, Harness 138, 146
Saddle Trees, Wooden 315
Safes, Burglar Proof 138, 346
Safes, Marine 154, 255
Safes, Metal 154
Safes, Plates for 378
Safe Doors, Guard for 394
Safety Fuse Composition 18
Sails, Reefing 18, 154, 174, 250
Sails, Working Ship's 290
Sail Supporter 18, 50
Sash, Operating 18
Sash Balance 18, 98, 210
Sash, Window 82
Sash Fastener 178, 210, 290, 314, 323, 347
Sash, Removable 186
Sash, Metallic 230
Sash Holder 330, 355
Sash Pulley 362
Sash, Hanging 394
Sausage Machine 106, 354
Saws, Filing and Setting 27
Saws, Reciprocating 58
Saws, Operating 370, 146, 311, 363
Saws, Adjusting Band 90
Saw, Adjusting Circular 162
Saw, Gumming and Jointing 178
Saw, Straining 186
Saw, Grinding Scroll 251
Saws, Dressing 266
Saws, Level for 306
Saws, with device for Squaring and Marking 299
Saws, Grinding 306
Saws, Sharpening Gin 370
Saw Teeth, Planing 2
Saw Filer 18, 42, 50, (2), 98, 370
Saw Set 130
Saw Gummers 178, 250
Saw Mills 50
Saw Mills, Feed Motor for 2, 82
Saw Mills, Portable 122
Saw Mills, Clamping and Feeding the Log in 339
Saw Mill Blocks 363
Sawing Machines 58, 82, 139, 162, (2), 186, 230, 250, 251, 255, 282, 346, 362, 378
Sawing Machine, Guide for 50
Sawing Machine, Cross Cut 130, 242, 250, 266, 402, 410
Sawing Machine, Governing the Cut of 130, 282
Sawing Machine, Shield for 282
Sawing Machine, Feed for 282
Sawing Machine, Gearing for Feed Rollers in 138
Sawing Machine, Carriage for 362
Sawing Machine, Reciprocating 402
Sawing Beveled Curves 106
Scales, Platform 146, 266, 322
Scales, Counter 395
Scissors Sharpener 98, 154, 202, 242
Scraper, Cotton 66
Screen for Steam Pipes, (Design) 259
Screens for Grain Separators 58
Screens for Windows 269
Screens, Wood 243
Screw Cutters 130, 242, 274, 354
Screw Threads, Chuck for 282
Screw Driver 162
Scuttle, Coal 163
Scuttle and a Sifter Combined 266
Scythes 211
Scythes Fastening 156
Scythes, Sashes 10
Scythes, Attaching to 42
Seats, Car 27, 50, 151, 258, 379, 402
Seats for Vehicles 275
Seats and Berths for Cars 354, 339, 410
Seats, Standards for 106
Seaming Machine 162
Seed Planters 10, (2), 27, 42, (4), 50, 58, 66, 82, 98, (2), 106, 107, 114, (2), 138, 146, (2), 162, (2), 174, 178, 195, 202, 203, 218, (2), 243, 314, 346, 347, (2), 379, 386, 394, (3), 403
Seed Planters (Cotton) 2, 59, 130, 202, 251, 259, 274, 282, 291, 314, 330, 346
Seed Drills 98, 138, 230, (2), 243, 258, 307, 330, 370

Seed Drills, Measuring Apparatus for 98
Seed Sowers 42, 58, 66
Seeds, Extracting Oil from 258
Seeding Machines 2, 42, 66, 82, (2), 106, (3), 122, (4), 138, (2), 146, 162, 194, 202, 210, 250, (2), 251, (2), 258, 282, 291, 298, 306, (3), 330, (2), 338, 395, (2), 410, (3)
Selvages in Cloth, Turning 346
Separators, Ore 2, 50, 98, 339, 347
Separators, Coal 50
Separators, Grain 106, 162, 235, 251, (2) 322, 346, 403
Separators, Cranberry 162
Separators, Flour and Bran 291
Separators, Gas 306
Separator and Cleaner, Grain 230
Separators, Wheat 386
Separators and Threshers, Grain 394
Separating Only Matters from Water 34
Sewing Machines 2, 34, 42, (3), 58, 66, (2), 74, 82, 90, 106, 107, 114, (2), 122, 130, (2), 146, (2), 154, (2), 155, (3), 162, (4), 163, 186, 202, (2), 211, (2), 219, 230, (3), 234, (3), 242, 258, 266, (2), 282, 299, 314, 315, 322, 323, 330, 331, (2), 339, (2), 346, (2), 347, (5), 354, (2), 355, 363, 378, (3), 379, 386, (2), 394, 403, (3), 410, (3)
Sewing Machine, Guide for 291
Shackle, Chain 259
Shade Fixtures 174
Shade Roller 194
Shades, Window 19
Shades for Gas Burners 27
Shades Lamp 58
Shafts, Tubular 242
Shafts, Rotating 354
Sharpeners, Pencil 274, 290, 298
Shears, Rotary 66
Shears for Cutting Bank Notes 146
Shears, Tailor's 362
Sheet Shearing Machine 10, 331
Shells, Explosive 163, 210
Shells, Moulding 106
Shellers, Corn 42, (2), 98, 162, 178, 219, 355
Shelving for Curing and Storing Cheese 98
Shingles 18
Shingles, Carbonized 114
Shingles, Sawing 42
Shingle Machines 66, 98 (2), 138, 146, 162, 163, 174, (2), 178, (2), 186, 194, 351, 358, 346, 362
Shingle Machine, Choking Feed of 282
Shingle Machine, Operating Bolt of 322
Shingle Machine, Feed Motion of 330
Ships, Construction of 146
Ships, Bulkheads of 235
Ships, Air Cells for 338
Ships, Ventilating 355
Ships, Coppering the Interior of 362
Shoe Brush Case 386
Shoe Tool 403
Shoes for Truss Girders 266, 275
Shovel Machine 298
Shovel Handles, Binding 210
Shower Bath 2
Shutters, Iron 74, 194, 290, 338
Shutters, Illuminated Iron 258
Shuttles, Hinge Eye for 154
Sifters, Coal 2, 10, 58
Sigs, Door Plates, Ac. 250, 298
Signals, Semaphore 314
Signals, Locomotive 331
Signal Lights, Electric 346
Signalizer for R. R. Bridges 355
Silk, Sewing 179
Silk, Preparing for Use with Felling substances 290
Skates 98, 131
Skirts, Wagon 379
Skirts, Artificial 218
Skirts, Ladies 84, 330, 339, 340, 354, 403
Skirts, Cords for 266
Skirts and Bustles 362
Skirt Supporter 218
Skirt Hoops, Clasp for 331
Slate, Bedstead 130
Slate, Planing Blind 230
Sled Runners 295
Sleeve Fastener 27, 58, 290
Sleigh Runners, Attaching 363
Smoke Stack for Steamers 388
Smoke Conductor for Locomotives 203
Smoothing Machine 155
Smut Machines 59, 230, 250, 275, 282, 314, 322, 402
Snauffers, Candle 98
Soap Making 290, 242
Sod Cutter 48
Soda Fountain 259
Soda Water Apparatus 307
Soldering Iron 370
Sounding Apparatus 306
Spading Machine 59
Spark Receiver 138
Spectacle Bows 18
Spikes 34
Spoke Machine 202, 274
Spinning Machines 66, 162, 211
Spinning Bobbins 230
Spinning Frames 263
Spinning Mules 410
Spiral Forms, Turning 82
Spitacorns 315
Splints, Attachment for 146
Spoke Machine 18, 98, 338
Spoke Shave 315, 362
Spoons, Iron 66
Spoon Handles (Design) 195
Springs, Car 66, 138, (2), 174, 202, (2), 282, 314, 378
Springs, Carriage 58, 154, 218, 322, 335
Springs, Door 10, 138
Springs, Upholstery 82
Springs, India Rubber 90
Springs, Valve 138, 202
Springs, Pneumatic 242
Springs, Window 306
Springs, Testing 242, 354
Springs, Carriage, Heads of 298
Spring, Metallic 410
Spring for Scouring Keys of Journal Boxes 295
Spring Guard 195
Spring Bracing for Vehicles 122
Spar, Ice 174, 195
Squares, Metallic 42
Staatite Articles, Manufacturer of 370
Stable Apparatus for Securing Animals from Fire 50
Stair Wreaths, Sawing 138
Stalk Outter and Grider 130, 218
Stamp Hand 27, 138, 251, 290, 363
Stamps, Affixing to Letters 298

Stands, Music 27
Stands, to hold Shovel and Tonga 34
Stands, to hold Stove Covers 42
Stands, Towel (Designs) 307, 387
Stands, for Copying Press, (Design) 235
Staples for Blind Slate 242
State Rooms, Life-Preserving 314
Staves, Sawing 2, 234
Staves, Crozing and Chamfering 2
Stave Machines 154, 186, 202, 250, 347
Steam, Anhydrous 82
Steam, Generating 219
Steam Cylinders, connecting with Steam Chests 315
Steam Alarm and Safety Apparatus 355
Steam Distributing Apparatus 378
Steel and Iron, Tempering and Hardening 243
Steering Apparatus 90, 114, 243, 290, 403
Stencil Pallet 258
Steps Illuminated 322
Stereotype Plates 275
Stills, Spirit 2
Stirrups for Riding Saddles 27
Stone Gatherer 202, 354
Stons Dressing Machine 202
Stone Sizing Machine 378
Stones, Crushing 330
Stones, Drilling and Splitting 362
Stools, Music 410
Stoppers, Chain Cable 162, 202, 394, 410
Stores, Moving 2
Stoves, Cooking 82, 106, 122, 178, 230, 242, 259, 298 (2) 299, 307, 314, 315, (2) 339 (2) 346, 386, 387, 395, 402
Stoves, Coal 42, 58, 379
Stoves for Burning Fat 82
Stoves, Gas 154, 386
Stoves, Air-tight 163
Stoves, Wood 314
Stoves, Steam 370
Stoves (Designs) 2 (2) 10 (2) 61 (4) 59 (3) 74, 107, 114, 122 (2) 131, 146 (3) 155 (3) 163, 186, 203, 261, 283, 291 (3) 315 (2) 339, 347 (4) 363 (2) 371, 387, 395 (3) 403
Stove Doors (Designs) 291, 323
Straps for Boot Legs, Securing 174
Strap Back Band 314
Straw Cutters 2, 10, 50, 90, 122, 138, 174, 202, 203 (2) 242, 251, 258, 259, 274, 275, 290, 306, 330, 370, 394
Straw Shaker 371
Street Sweeping Machine 18, 50, 90, 290
Striping Machine for Painters 58, 98
Stuffing Boxes, 339
Stump Extractor, 154, 218, 322, 339
Submarine Deposits, Removing 386
Sugar Cane, Covering 98
Sugar Mold, Carriages 242
Sugar and Dextrine, Manuf'r of 308
Sulphur of Carbon 379
Sun Dial, Combination 379
Supporters, Abdominal 19
Supporters, Hose 274
Surveying and Calculating Instruments 82
Surveyors Graphodometer 363
Suspenders, Shoulder Brace 314
Switch, R. R. 162, 196, 306, 370
Switch, Signal Lantern 378

T

Tables, Extension 90, 106, 130, 275, 322, 323
Tables, Ironing 195, 251, 290
Tables, Billiard 242
Tables, Self-waiting 242
Tables for Sewing Machines (Designs) 195, 315
Tables, Turn, for R. R. 178
Tables, Turning and Sliding, for R. R. 234, 395
Table, Money 395
Table Rack for Ships 162
Tack, Leathering 355 (2)
Tank, Locomotive 34
Tanning Apparatus 174 (2)
Tanning Composition 242
Tanning Process 322
Tee Service (Design) 155
Teeth, Artificial, Bases of 258
Teeth Extracting 307, 365
Teles, Wire, Insulated 10
Telegraph Wire, Coating 242
Telegraph Signs 10
Telegraph Bell 10
Telegraph Fire Alarm 90
Telegraph Keys, Operating 146
Telegraph Pautographic 346
Telegraph Machines 378 (2) 379, 394
Tenders to Locomotives, Supplying with Water 275
Tenon Machine 18, 186
Thermometer 306
Thills for Carriages 2
Thimbles 106
Thread, Spooling 2
Thread, Polishing 363
Threshing Machines 162, 250, 315, 403
Threshing Machines, Endless Aprons for 58
Threshing Cylinders, Balancing 42
Toy 274
Ticket Holder 242
Tidal Alarm 174
Ties for Horses and Cattle 242
Tiller Ropes, Protecting 250
Time Keepers 290
Tim-keepers, Escapement for 298, 395
Tin, Binding 146
Tip for Fishing Rods 299
Tires, Tightening 10, 74, 323
Tires of Wagon Wheels 58
Tires, Fitting Wagon 218
Tires, Securing to Cart Wheels 266
Tires, Reducing 346
Tires, Upsetting 330
Tires, Hooping 347
Tobacco, Crimping 250
Toll, Gathering in Grist Mills 330
Tongs, Blacksmiths' 138
Tongs, Fire 202
Tongs, Pipe 250, 314
Tool for mixing Split Baskets 178
Tool, Expanding 202
Tool for Cutting Taper Sticks 362
Tool Handles, Socket for 346
Tool Box (Design) 291
Tools, Garden 203
Tools, Attaching to Handles 210
Tracing Mulin 18
Tracks, R. R. 162, 178
Tracks, R. R., Connecting 194
Tracks, R. R. for City 235
Trade Marks 131
Traps, Animal 2, 194, 250, 362, 411
Traps, Fly 27, 195, 275
Traps, Rat 274

Trap, Steam 242
Traps for Sinks, Sewers, Ac. 878
Trees, Protecting from Worms 82 (2) 194, 379
Trees, Harness 194
Tripod Head for Surveyors 363
Trucks, Self-dumping 50
Trunks, Fireman's 370
Trunk Handles 258
Trunk Protector 355
Trusses 98
Truss Pads 258, 314
Tubes for Seed Planters 122
Tubes for Fire Boxes in Steam Boilers 130
Tubes, Cutting Metal 130
Tubes, Punching Metal 282
Tubes, Cop 258, 386
Tubes, Cop, Applying to Spindles 298
Tubes, Speaking 386
Tubing, Finishing Soldered 323
Tug Fastening 34, 298 (2)
Turpentine, Distilling 307, 315
Twear 274
Twine Box 370
Types (Design) 10, 163, 307, 315, 331, 355 (3) 395
Type Casting 242, 355
Type Distributing 27
Type Setting and Distributing Machine 18
Type Case for Printers 346

U

Umbrellas 266
Umbrellas, Cane 66
Umbrella and Head Rest 322

V

Valve Gear for Oscillating Engines 18, 27
Valve Arrangements 154, 162, 174
Valve Gear 347, 410
Valves for Steam Engines 18, (2), 34, 122, 154, 410
Valves, Slide 98
Valves, Hydraulic 130, 195
Valves, Giving Motion to 130
Valves, Throttle 174, 258
Valves, Rotary 202
Valves, Eccentric 210
Valves, Safety 218
Valves, Operating 230
Valves, Steam 276, 314, 395, (2), 403
Valves, Steam Trap 307
Valve for Wind Wheels 58
Vapor Apparatus 362
Varnish Composition 230
Varnish for Leather 306
Vats, Apparatus Attached to Steam Coils in 410
Vault Covers 122, 166, 336, 346
Vault Covers, Attaching Glasses to 230
Vault Covers, Glasses for 370
Vehicles, Detaching Horses from 50
Vehicles, Wheel 154
Vehicles, Fifth Wheel for 218
Vehicles, Attaching Shafts to 274
Velocipedes 154
Vergidrigs, Manufacture of 10
Vessels, Flooding 50
Vessels, Unloading 74
Vessels, Raising Sunken 210, 330
Vessels, Center Board for 266
Vessels, Masting and Rigging 339
Violin Attachment 74
Vise 230
Vise Anvil 260

W

Wagons, Dumping 58
Wagons, Manure 210
Wagons, Running Gear of 364
Wallet Fastener 260
Warps Dressing and Sizing 82, 290
Washboards 10, 130, 332
Washing Machines 10, 50, 59, (2), 66, 90, (2), 98, 99, (2), 130, (2), 138, 146, 174, 178, 186, (2), 203, 219, 230, (2), 242, 258, 275, (2), 282, 290, 291, 306, 307, 314, 323, 330, 346, 354, 362, 370, 402, 408, 410
Washstands 234, 314
Watch Cases 258, 269, 330, 370, 403, (2)
Watches 99

